Railway Age

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Motor Bus and Truck Transportation

THE rapid development of motor highway transportation within recent years has presented new, important and perplexing problems to railway managements. Private automobiles and motor buses have taken from the railways at least one-fourth of their passenger business, and in some parts of the country the loss has been relatively larger. The motor truck has taken a large amount of local freight business and has taken some freight moving long distances.

The managements of the railways of the United States, in their history of almost a century, have encountered almost innumerable problems of engineering, financing, traffic development, operation, and regulation. When these problems first appeared the managements may have seemed slow in finding solutions for them, but as they have grown and taken definite shape the managements have always courageously grappled with and solved them.

Railway managements have been charged with being slow to tackle problems presented by the development of motor transportation, but, as has been the case with other questions in the past, they are now beginning throughout the country to work out and try definite plans for competing with motor bus and truck transportation or of co-ordinating motor transportation with rail transportation.

Competition or Co-ordination

The multiplicity of plans with which the railways are already experimenting and the extent to which they already are acquiring motor buses and trucks to be operated in connection with their rail lines is strikingly shown by information they have furnished to the *Railway Age* in response to a questionnaire recently sent to their presidents. The first article presenting information secured through this questionnaire and indicating the nature and extent of the competition the roads are meeting is published elsewhere in this issue under the heading of "A Survey of the Bus and Truck Situation." A second article giving information regarding the measures the roads are taking to meet this competition will be published in next week's issue of the *Railway Age*.

Many railway men have become convinced that to protect themselves from unfair and destructive competition and adequately extend and improve their transportation service, the railways will find it necessary to acquire a large number of buses and trucks and operate them either directly or through motor transportation companies controlled by them. This will be shown by the information given in the above mentioned articles.

The Railway Age's Program

In order to solve the problems presented it will be necessary for the railways to try many plans and study and compare the results. It is a proper function of the *Railway Age* to make itself a clearing house for information regarding all railway problems, including those concerning the relations between rail and motor transportation. This paper has, therefore, adopted a program for dealing extensively in its editorial columns in the future with the subject of motor transportation, both bus and truck, as it concerns the railways.

Questions to Be Answered

There are various important questions that must be answered in the determination of how, and the extent to which, the railways should engage in motor bus and truck transportation. To what extent should they engage in the operation of motor vehicles in competition with other companies and persons operating such vehicles on highways directly paralleling railway lines? To what extent will it be profitable for them to substitute motor service for unremunerative rail train service? To what extent should they use motor vehicles as auxiliaries and feeders which will extend their transportation service to communities not now reached by them or to the plants and store doors of shippers? Should railways try to operate motor vehicles with their present organizations or create separate organizations for operating them? What part will the rail motor car play as a competitor of, or substitute for, motor highway transportation? How should motor buses and trucks be taxed in order to put them on a fair competitive basis with the railways? How should they be regulated when engaged in rendering a common carrier service as auxiliaries to the railways or in competition with them? What results are the railways that are engaging in motor service actually securing?

These are a few of the more important questions that must be answered; and the *Railway Age* will so enlarge its scope as to answer them more completely than in the past and without in any way reducing the space usually given in its columns to other subjects.

Labor Cost Not the Only Factor at Small Terminals

THE more or less general absence of mechanical coal and ash handling facilities at smaller engine terminals was commented on recently in these columns, and attention directed to careful estimates indicating that, through a reduction in expensive manual labor, such facilities may be expected to pay for themselves in a period of three or four years or in some cases less. But the saving in labor is not the only consideration. Locomotive utilization and fuel stand-by losses while locomotives await coaling must be considered. The first of these arguments was recently advanced in the case of a small terminal where locomotives are now coaled by hand and the amount of coal involved is not sufficient to justify the expenditure for mechanical coaling equipment. In India this feature of locomotive utilization is also recognized as having an important bearing on the situation. An official representative of the mechanical department of the East Bengal State Railways, who has been making a first-hand study of railway operating methods in this country, is authority for the statement that it costs only an anna (about two cents) a ton to handle coal from cars to locomotives in India, but the demand for motive power is such that mechanical facilities for coaling locomotives direct from overhead bins are regarded as justified on the basis of the time conserved in the coaling operation. In connection with fuel stand-by losses, the progressive management of a southwestern railroad which has been investigating this situation at small terminals, finds that at one point where mechanical coaling facilities would not result in a net return of more than six or seven per cent from the reduction in the labor cost for handling coal, the saving would actually be considerably augmented by a reduction in the amount of fuel now burned at the terminal while locomotives are held under steam waiting to be coaled.

Locate and Correct Weak Equipment Designs

ONE effective way for railroad mechanical departments to reduce costs and promote more reliable operation is by correcting weak features in the design of cars and locomotives which show up under the rigorous service conditions encountered on the road. An analysis of the causes of engine failures and train delays will prove a prolific source of suggestions regarding various parts of the equipment which are weak and need strengthening. The shop and enginehouse men are probably in the best position of anyone to know which parts give the most trouble by breakage or excessively rapid wear. Mute evidence in support of their testimony can be obtained by an examination of the storekeeper's records. One of the most notable recent examples of the elimination of a weak design is the improvement program undertaken by the Chicago, Rock Island & Pacific, whereby 107 Vanderbilt type tenders will be completely remodeled and rebuilt as described on another page of this issue. These tenders, placed in service in 1912 and 1913, gave more or less trouble from the beginning owing to the development of tank leaks on the road. As time went on and the bottom tank plates corroded, this condition was accentuated, and eventually the cost of maintenance became so high (an average of $864 at every shopping) that it was evident something must be done. The Rock Island mechanical department accordingly developed a new tender design whereby a completely remodeled tank is mounted on a standard four-sill tender frame, thus getting away from the weaknesses inherent in the original Vanderbilt tenders. Ten of the new tenders have been in service a sufficient length of time to demonstrate the practicability of the design, and, since the total cost of conversion is only about $3,500, including labor, material and shop pro rata, the new tenders promise to pay for themselves in decreased maintenance cost in a period of slightly over four years. It may be assumed as a safe general rule that all locomotive and car parts which give trouble in service due to breakage or rapid wear should be carefully checked to determine if some change in design, oftentimes slight, will not remedy the difficulty.

A Signal Cabin Inspector Appointed on the C. & O.

A NEW leverman on the Chesapeake & Ohio, unfamiliar with the operation of an interlocking, put a train down the wrong track recently, resulting in a condition in which an accident was narrowly averted. In the investigation of this occurrence it was decided that some systematic program of education and examination of levermen should be inaugurated, rather than leaving it to the other levermen, signalmen, trainmasters or other operating officers to teach new men the operation of interlocking plants. The superintendent of signals was directed to establish a new position and to assign a competent man to devote his entire time to the investigation of operating methods at interlockings, to teach, examine and qualify levermen and to co-operate with the enginemen and operating officers in getting trains through interlockings as fast as possible with safety. Within 15 minutes of the receipt of these instructions, the superintendent of signals appointed a man by wire, advising him of his new duties, so that before the day was over the new signal cabin inspector was on the job. This man, who was formerly a signal inspector, is familiar with the principles of interlockings and is, therefore, able to teach new levermen the manipulation of a plant in a short time. Although he has been employed in his new duties less than 30 days undesirable practices have already been corrected at several interlockings and a system of qualifying operators to be levermen at some of the more important plants has been inaugurated. The employment of a signal cabin inspector varies considerably from the practice on a majority of roads, and the results obtained will, therefore, be watched with interest.

Manchester and Victoria

ON August 25, 1911, the transverse fissure was first brought into prominence as a defect in steel rails by the disastrous accident on the Lehigh Valley at Manchester, N. Y., which resulted in the death of 29 people and the injury of 62 others. On October 27, 1925, a defect of the same kind led to an equally disastrous accident on the St. Louis-San Francisco near Victoria, Miss., when 23 persons were killed and more than 75 persons were injured. The Manchester wreck disclosed the transverse fissure as a menace to travel for the first time and in the years that have intervened much study has been given to this form of defect. Yet 14 years after the original accident brought this type of rail failure to light, another accident occurred in which an even larger number of persons were killed and injured. Furthermore, the rail that caused the accident was rolled six years after attention was called to this defect by the Manchester accident. Even more distressing is the fact that there is still no agreement among rail authorities re-

garding the causes of this form of defect or regarding the measures that should be taken to eliminate it.

The transverse fissure is a particularly dangerous form of rail failure for it develops internally with no external evidence of its existence. As a result, it leads to failure without warning. Under such conditions, which make it impossible to detect it by an inspection of track, it is evident that the solution must be found in the discovery of the causes leading to the formation of this defect and then to the removal of these causes. Unfortunately the search for these causes has left much to be desired. There has been no united, concentrated study by those most concerned to get at the facts, regardless of whom they affect. Rather, there has been a disposition on the part of the manufacturers to endeavor to place the blame on the conditions of service, such as heavy wheel loads, deficient maintenance, etc., to which the rail is subjected, and an equal tendency on the part of railway officers to place the blame on conditions and methods of manufacture.

It is probably true that some reduction has been made in the number of transverse fissures as the result of the increased attention which has been given to rails in recent years. However, transverse fissures are still numerous and are therefore still a serious menace to railway travel. For this reason the railways and the rail manufacturers alike have a common interest and, in fact, a common duty and responsibility to throw aside prejudices and opinions and to engage in a joint scientific study to determine beyond question the causes of transverse fissures and the measures which must be taken to eliminate them. Until this is done the transverse fissure constitutes a challenge to the scientific ability of both. The repetition of accidents such as at Victoria 14 years ago after the problem was first brought to light, serve as an indictment of our metallurigical talent which calls for the inauguration of renewed scientific investigation of this problem that will be without prejudice and prompted solely by a determination to get at the real facts.

Real Cooperation Between the Shippers and Railways

IT has been said occasionally that the real test of the value of the Regional Shippers' Advisory Boards would come when there was a shortage of railway capacity instead of a surplus such as has existed for the last two and one-half years. The real object of the boards is to bring about cooperation between the railways and the shippers which will prevent shortages of transportation. This object actually has, in some important instances, been attained. There probably would have been shortages of transportation for moving grain in the northwest in the falls of both 1924 and 1925 except for the energetic cooperation of the railways and the grain committee of the Northwest Regional Advisory Board. The increase of freight business in the extreme southeast owing to the Florida land boom has been so extraordinary as to cause a shortage of transportation in that territory. In consequence a Florida division of the Southeast Regional Advisory Board has been organized. It will be interesting to observe the results gained by the closer cooperation between the railways and shippers of Florida which will be effected through this new organization. Cooperation could hardly be subjected to a severer test.

To whatever cause or causes it may be attributed, it is a fact that the peak of another year's freight business has been passed without serious congestions and delays excepting in the extreme southeast. In every week except one of the seventeen weeks ended November 14 carloadings exceeded one million cars, and yet at no time did the railways have less than 100,000 surplus freight cars. After referring to the shortages of transportation which were chronic during and immediately following the war years, R. C. Ross, chairman of the Mid-west Regional Shippers' Advisory Board, said in an address at the dinner of the National Markets Association in Chicago on November 30: "The recovery of the carriers from this most serious situation is an epic in our commercial history". Mr. Ross attributed the betterment of transportation conditions to "a marked improvement in the morale of those engaged in the railroad business largely as a result of the practical disappearance of the government ownership bogey", to large investments that have been made by the carriers in their physicial plants, and to "organized cooperation between shippers and carriers."

He referred to the difficulties the railways had in the past in distributing cars because of lack of correct information as to shippers' needs and to the improvement that has occurred in the information furnished to them through the regional boards. "This machinery, while imperfect as yet", said Mr. Ross, "is credited by the American Railway Association with being very largely responsible for the ability of the Car Service Division to estimate the carloadings for the country as a whole this year up to September 1 to within 8/10ths of 1 per cent of the actual loadings. With the continuing improvement of this forecasting machinery it is expected that the Regional Advisory Board's reports will provide, perhaps, the most accurate estimate of prospective business available from any quarter".

It is not merely the effective work that has been done by the Regional Advisory Boards in helping the railways handle traffic better that is important. The conferences between shippers of all kinds of commodities and railway officers that have taken place periodically, and the measures they have adopted jointly to solve their common problems, have created a much better feeiing between them. Those on one side of the table have learned that those on the other side are trying to handle their business in a reasonable and efficient way, and there has been an increase of mutual confidence which will be most valuable if there again comes a time when there is a general shortage and not a surplus of transportation to be divided among shippers.

The enthusiastic interest that business men in all parts of the country, and also members of railway regulating bodies, are taking in the cooperative efforts of the railways and shippers to improve the utilization of transportation facilities is illustrated by many things that have been said. J. A. Swalwell, who is president of the Dexter-Horton Bank of Seattle and executive secretary of the Northwest Pacific Advisory Board, has emphasized in a letter that it is important that the "purposes and objectives of the board plan should be known to every branch of agriculture and the public at large. When this has been accomplished", he has added, "the plan is so simple of performance, so definitely appealing, offering such remunerative possibilities to business as a whole, that I cannot conceive of any line of commercial endeavor failing to contribute its share of energy to the general advancement of the whole plan".

At the recent convention of the National Association of Railway and Public Utility Commissioners a report was made by the Joint Committee on Public Relations of the Interstate Commerce Commission and the National Association of Utility Commissioners of which Commissioner E. I. Lewis of the Interstate Commerce Commission was chairman. In this report it was said: "Carriers and shippers now meet voluntarily in regional conferences * * * As a result of these new public relations the heaviest traffic in the history of this country is being

moved this year with less cars and fewer locomotives than used in any recent previous year. Thus the shippers and the carriers, under ideals and conditions that have been created through the channels of regulation, are voluntarily, I am pleased to report, beginning to withdraw from commissions one of the most troublesome of common carrier problems * * * We do not know what may lay in the future, but we do know that there have been brought into private operation and control of these facilities, on which our national prosperity is so dependent, a public participation in the management that has thus far produced impressively satisfactory practical results".

J. T. Gillick, vice-president of the Chicago, Milwaukee & St. Paul, said recently: "Grain men sitting on the committee (in the northwest) were greater czars than the railroad men ever dared to be. They placed embargoes, made the railroads like it, made the shippers like it, and the result was that the grain from the northwest was handled without any difficulty, and I am very sure to the satisfaction of the shippers. Elevators were kept open and cars were released promptly and returned to the grain fields promptly. We feel it was the greatest demonstration that we ever had in the grain country".

There began a good many years ago to be talk about "cooperation" between the shippers and the railways. For a long time it consisted mainly of talk. There is now throughout the country real cooperation in regard to freight service, and in his recent address in Chicago Chairman Ross of the Midwest Regional Advisory Board said, "I am not sufficiently optimistic to believe that this happy condition can ever be attained to the same degree in the disposition of rates," but he indicated a hope that even the fixing of rates may in future become less a matter of hearings and litigation, and more a matter of cooperation between shippers and carriers.

There is, of course, a close relationship between rates and service. In the long run the kind of service rendered largely determines the rates that must be charged, and the rates that are allowed to be charged largely determine the kind of service that can be rendered. It seems probable, in view of what has been accomplished by cooperation with respect to service, that there will be in future more cooperation between shippers and railways in the adjustment of rates.

Freight Rates and Commodity Values

FOR some years officers of farmers' organizations and members of Congress and of railroad commissions representing agricultural territories have been contending that the values of different commodities should be given preponderant or almost exclusive consideration in fixing the freight rates upon them. It has been claimed that freight rates are higher upon farm products *in proportion to their value* than upon other commodities, and that therefore the giving of more weight to commodity values would result in reductions on farm products and advances on other commodities. The Hoch-Smith resolution adopted by Congress was predicated upon this assumption and upon a further assumption which we shall merely notice in passing. This further assumption is that the farmers and other shippers pay the rates on the things they ship and that, therefore, a reduction on farm products and a compensating advance on other commodities would be beneficial to the farmer. This assumption which is so often made is unsound. In the long run it is the consumers and not the producers of a commodity who usually pay the freight rates on it, whether the commodity be wheat, lumber, coal or silk, and whether it be a high priced or low priced commodity.

However, even if it were true that freight rates on farm products were higher in proportion to their value than those upon other commodities it would not follow, regardless of who pays the rates, that a general readjustment of rates should be made. Freight rates always have been based upon competitive conditions and costs of handling as well as upon commodity values. This has been done because experience has shown that the development of a maximum freight business and its carriage at the lowest practicable rates require that as much consideration be given to other factors as to the value of commodities. Of more interest and significance to farmers than this mere statement of principles, however, is the fact that it can easily be shown that if the principle of basing rates more largely upon the value of commodities were applied the result would be a large increase in the rates on farm products.

A statement of the case for lower rates on farm products which is typical of many that have appeared was made recently in a public address by L. J. Tabor, Master of the National Grange. Mr. Tabor said:

"The last complete agricultural census indicates a valuation of farm crops of $21,400,000,000. The same census report indicates manufactured products had a value of 62 billion. The Interstate Commerce Commission indicate that agriculture paid $1,334,967,000 for freight in 1923. Manufactured products, on the other hand, paid $1,319,111,000 in freight; or in other words, agricultural producers paid 6.2 per cent of their income in freights, while the manufacturer paid but 2.1 per cent of his income in freight costs. This discrepancy of something like 200 per cent against agriculture is further increased when we note that the figures of the Department of Agriculture prove that only 52 per cent of farm products are marketed any distance from the farm; on the other hand, only 8.4 per cent of the manufactured products are used locally. Hence, the inequality relation to agriculture changes from 2 to 1 to almost 4 to 1 against the farmer, in comparison with manufactured products. On the other hand, the farmer pays at the rate of $3.49 for every ton of freight moved, while the manufacturer pays $2.54 for like service."

Mr. Tabor's statement of the total freight paid on farm products is incorrect. He has included not only the rates paid on animals and other farm products, but also those paid on products of forests, which amount to almost $420,000,000. Forest products are no more produced by farmers than is coal. Eliminating from his figure the rates paid on forest products, and also on fresh meats, other packing house products, hides and leather, which are manufactured articles, we have left about $834,000,000 as approximately the total freight charges on farm products in 1923, the last year for which complete statistics are available.

Now, let us first determine as accurately as practicable the present relations between the values of and the rates upon agricultural and manufactured products, and then add some statistics regarding the values of and rates upon some other large groups of commodities that Mr. Tabor does not specifically mention—namely, products of forests and products of mines. When comparisons between all these figures have been made we shall have more light upon how freight rates would be adjusted if the values of commodities were to be mainly considered.

There was furnished some time ago to the Senate Committee on Interstate Commerce a statement giving the average freight charges per ton upon, and the estimated average market values at destination of, practically all commodities shipped in carload quantities. The freight charges were those collected in 1923 and the commodity values those for 1922. The average value per ton of farm products given was $89.60 and the average freight charge per ton on them $6.30. The average value per ton of manufactured products was $105.40 and the av-

erage freight charge $4.95. On the basis of these figures the average freight charge per ton on farm products was 7 per cent of their value while the average freight charge on manufactured products was only 4.7 per cent of their value. Index numbers of the Federal Reserve Board indicate, however, that in 1924 the average value per ton of farm products had increased to about $98.53, and on this basis the average freight charge per ton on them last year was 6.3 per cent of their value. Meantime the average value per ton of manufactured products increased to $108.88, on which basis the average freight charge per ton was 4.55 per cent of their value.

These figures, however, omit a very important factor. This is, the average distances the different kinds of commodities were carried. Statistics introduced in the rate advance case of the western lines now pending show that in western territory the average haul of manufactured products is about 265 miles while the average haul of farm products is about 305 miles, and the average receipts per ton per mile on farm products in western territory are 1.256 cents while on "manufactures and miscellaneous" they are 1.360 cents. Therefore, in western territory the average rate per ton per mile on "manufactures and miscellaneous" is 9 per cent higher than on farm products while their average value per ton is about 10½ per cent higher. It would be difficult to make a case for a general readjustment of rates upon farm products and manufactured products upon the basis of this small difference between the percentage relationships of freight rates and commodity values.

But, as indicated above, there are other large groups of commodities that must be given attention in the consideration of a proposed general readjustment of freight rates.

The most important of these are products of forests, the total freight charges on which already have been given, and products of mines, the total freight charges upon which in 1923 were $1,300,000,000. According to the estimates above referred to the average value per ton in 1922 of forest products was $16.60 and of products of mines $5.77. Application of the Federal Reserve Board's index numbers indicates that the average value of forest products in 1924 was $16.68 per ton and of products of mines $4.74. These statistics indicate that in 1924 the average freight charge per ton was 21.5 per cent of the average value per ton of forest products at destination and 43 per cent of the value of products of mines.

The aggregate freight charges paid on products of forest and mines are twice as great as those paid upon farm products. It is plain, therefore, that if freight rates were to be based more largely upon the value of commodities the rates on the vast tonnage of products of forests and mines would have to be reduced so much as to necessitate very large advances in the rates on both farm products and manufactured products.

Why are freight rates higher in proportion to commodity values on sand than on coal; on coal than on lumber; on lumber than on wheat, and so on? For a reason already given—viz., that the cost of transporting commodities must be given great consideration. If a commodity should be transported for less than the minimum direct cost of handling it the railway would incur a net loss on it, and those who shipped it would be subsidized at the expense of other shippers. No public service company can be justified in subsidizing some of its patrons at the expense of others. From the basis of minimum cost of transportation rates are and must be graduated upward roughly in proportion as costs of transportation and the values of commodities become higher. The average revenue per ton received for the transportation of clay, gravel, sand and stone is only 90 cents, but the average value of these commodities at destination in 1922 was only $2.26. The average freight revenue per ton from wool is $18, but its average value at destination in 1922 was $1052 per ton. The rate per ton on wool is twenty times as great as on sand, stone, etc., but its value per ton is 420 times as great. While rates on high priced commodities usually are higher than on low priced commodities, they usually are not higher in proportion to the difference in values because of the consideration given to costs of transportation. Wool is a farm product. The average rate per ton charged on it is less than 2 per cent of its value. Sheep and goats also are farm products, and the average rate charged per ton on them is about 6½ per cent of their value. Nevertheless, the average rate per ton actually paid for the transportation of wool is twice as great as the average rate per ton paid for the transportation of sheep and goats.

A general readjustment of rates based upon the value of commodities would necessitate not only great changes in the rates on all the large groups of commodities, but on commodities in the same general groups. In the farm products group it would result, for example, in increasing the rates on grain in proportion to those on hay, in advancing the rates on tobacco in proportion to those on cotton, in advancing the rates on butter and cheese in proportion to those on livestock, and so on.

The theory upon which the making of relatively lowet rates on farm products is being widely advocated is wholly untenable, because its application would actually result in large increases in the rates on farm products, and, because it would revolutionize the entire freight rate structure, cause many low priced, heavy tonnage commodities to be transported at rates far below the bare out-of-pocket cost of carrying them, and thereby demoralize and revolutionize the whole industry and commerce of the nation.

Books and Pamphlets of Interest to Railroads

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Cost of Living Charts, prepared by Bureau of Railway Economics. Revised issue showing trends of wages, retail prices, etc. 5 charts. Pub. by Bureau of Railway Economics, Washington, D. C.

Industrial Pensions in the United States, by National Industrial Conference Board, Inc. History, types of pension systems, administration, and, pages 141-157, a list of companies, including railroads, having pension systems. 157 p. Pub. by National Industrial Conference Board, Inc., New York City. $2.00.

Prosperity Through Power Development. Abstracts from papers presented by Americans at the World Power Conference. 59 p. Pub. by National Electric Light Association, New York City.

Thirteenth Annual Report of the Secretary of Commerce. Covers fiscal year ended June 30, 1925. "Transportation," p. 33-35. 213 p. Pub. by Govt. Print. Off., Washington, D. C. 20 cents.

Thirteenth Annual Report of the Secretary of Labor. Covers fiscal year ended June 30, 1925. 141 p. Pub. by Government Printing Office, Washington, D. C. 20 cents.

Correction: Poor's Railroad Manual, is sold in conjunction with the Manuals of Public Utilities, Industrials and Feature Volume; complete set costs $75. The price of Poor's Railroad Manual was erroneously given in the November 14 book-list as $15.

Letters to the Editor

How Will It Strike the Public?

CHICAGO.

TO THE EDITOR:

I have been wondering if you have gotten the same "kick" that I have out of a recent suburban time card issued by a prominent road, the front cover of which carries an advertisement of a prominent bank, the opening line of which reads "Have You Made Your Will?" I have always thought that it was a necessary part of railway management to consider how things strike the public, but apparently the officers of this road do not consider it, or they would not remind their patrons of the necessity of making their wills before undertaking a trip on their lines, even though this trip does not extend beyond the limits of the suburban territory!

COMMUTING RAILWAY MAN

Purpose of Consolidations

ROCKINGHAM, N. C.

TO THE EDITOR:

The view of William Peter Hamilton, as to railroad mergers and the Transportation Act of 1920 (*Railway Age*, November 14, page 891), overlooks the fundamentals of the act.

His allusion to strengthening a business concern by consolidation is entirely diverse to the "Mind of Congress" as to railroad consolidation.

The end and aim of the 1920 Transportation Act is to reduce rates, and this may be only done successfully by a combination of such strong and weak roads as will result in equal earning power of all systems as finally consolidated.

When this is done, then a scale of rates may be readily made and maintained that would yield 5¾ per cent interest on the money invested, while at the same time making reduction in rates and, above all, an equality in earning power.

J. L. HAWLEY,
General Manager, Rockingham R. R.

"Knowing How to Express Oneself"

CHICAGO.

TO THE EDITOR:

Referring to your editorial, "Knowing How to Express Oneself," in your issue of November 7, the writer believes that when he was a young man he unconsciously aided himself in expressing his thoughts, both in writing and in speech, through belonging to a reading club and being assigned parts of standard plays or books to read aloud; also by his reading aloud, for the benefit of members of his household, good books or magazine articles.

The average person has a speaking vocabulary quite limited in comparison with his reading vocabulary; an equal speaking and reading vocabulary is desirable. The reading aloud of editorials in the best publications will, in addition to increasing one's vocabulary, assist materially in learning how to present a subject concisely and clearly. There is now a movement toward increasing family reading; probably it began with the view of having some member of a family read aloud daily from the Bible, but the movement is being extended to other reading aloud.

Young stenographers will find that reading aloud to others will be of great assistance in extending their knowledge and use of words, thus assisting them to advance to more important work.

J. N. R.

Single-Track Minds on Double-Track Railroads

NEW YORK CITY.

TO THE EDITOR:

Are we being slowly forced to conclude that our railroad operatives, on whom we depend for safety in travel, are in all cases endowed with what are called single-track minds? Recently published accident records have shown up an amazing variety of imperfectly functioning brains. At Monmouth Junction the fireman, on whom the rule-book depends in large degree for safety from collision, kept on shoveling in coal when he ought to have taken his seat at the window so that he could see the block signals. Evidently, the ability to intermit his firing every 50 or 60 seconds, so as to straighten up and look out of the window, is a feature of railroading in which that fireman is not greatly interested. It is too much like doing two things at the same time. His is a single-track mind.

In this accident there were five or more trains involved; two delayed freight trains, passenger train No. 162, passenger train No. 166, and passenger No. 6; all following one another on the same track. Is it true that the block system breaks down when crises, little or great, are thus bunched together? It looks as though freedom from death-dealing collisions depends largely on not ever asking engineers and trainmen to do anything outside of the regular rut. When telegraph operators or freight conductors have four or five written train-orders to handle at one time, or to keep continuously in mind for a half hour, they are liable to become confused and overlook or misconstrue one of the orders. (This is illustrated in the collision at Granite, Colorado, reported in the *Railway Age* of November 14. Two or more persons frequently become confused at the same time.) Does a multiplicity of trains endanger our lives in the same way that a multiplicity of dispatcher's orders does? The single-track mind, incapable of grasping two ideas simultaneously, seems to be with us everywhere.

An observer who has watched Engineman Carroll since the Monmouth Junction collision has gained the impression that Carroll's mind is of the over-cautious type; shall we say that this is a fact which ought to have led his superior officer to assign him to slower trains? A slow-acting mind is in effect a single-track mind.

With single-track minds or multiple-track minds, or any kind of mind, it is a duty to provide all practicable aids to easy signal reading; why not provide for the engineman a clock with a large second hand? If, with signals uniformly showing up every 5,000 ft., the engineer cannot estimate by landmarks, or by the revolution of the driving wheels, or by his native sense of time, when to expect the signal, give him an easy means of noting the ticking of the seconds. You may say that if he forgets to use all other aids he will forget to look at the clock; but the clock, if set up directly before his face, will at least give him one additional brace to prevent wandering of the mind. If it should only serve to make him watch the landmarks more intently, it would have served a good purpose.

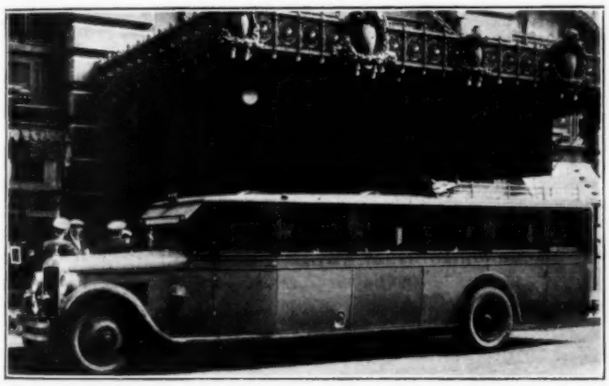
WALL STREET.

A Survey of the Bus and Truck Situation

Highway competition seriously affecting railway revenues— Suggestions for solution of the problem

[*This is the first of two articles regarding motor bus and truck transportation, the information in which is derived from various sources, but mainly from the answers made by railway presidents throughout the country to a questionnaire sent to them recently by the Railway Age. The second article, which will show what is being done by the railways to meet the competition of motor bus and truck transportation, will be published next week.—Editor.*]

PASSENGER earnings have been declining. Freight revenues, while increasing in accordance with the prosperity of the country, have likewise been affected, although to a smaller degree. This has been due to a newly developing form of competition, motor highway competition. The inroads made on freight and passenger revenues, particularly the latter, by privately owned automobiles and by buses and trucks operated in competition with the railways on the highways, have become so universal as to location and so alarming in extent that railway officers who are fully alive to the situation are struggling to find a solution of the problem which will not add to their financial burden and which will at the same time provide the best and most economical transportation service for their patrons.

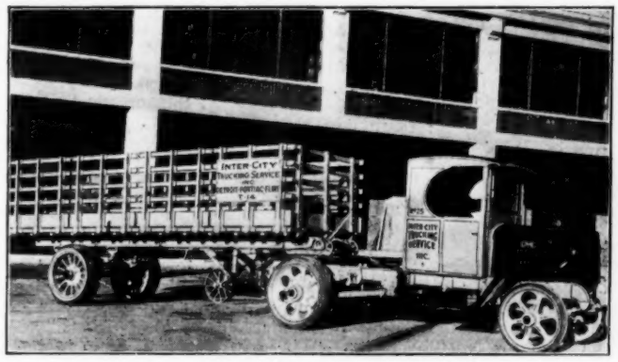


This Bus Is One of a Fleet Running Three Times Daily from Chicago to Muskegon, Mich., 200 Miles. Many Long-Distance Bus Lines Make Hotels Their Terminals

Before any conclusions as to the proper solution of the problem are reached it is essential that all of the factors entering into the situation be considered carefully. It is the purpose of these articles to show that there has been a decline in passenger travel, particularly over short distances, and that this has been due to an increased use by the public of passenger automobiles and motor buses operating on the improved highways; that motor trucks are likewise eating into the cream of the short haul freight traffic; that these highway transportation tools offer certain important advantages which must not be deprecated; that the present unfair characteristics of competition from highway common carriers due to inadequate, and in many cases, an entire absence of regulation, probably will soon be corrected by legislative enactment; that the railways are adopting various means of meeting this competition; and that an increasing number of railways are reaching the conclusion that the solution lies in their own adoption of bus and truck operation, arrangements for which are already well advanced. A large part of the information given in this article was furnished by railways throughout the country in response to questionnaires addressed to their presidents which recently were sent out by the *Railway Age*.

Decline of Passenger Earnings

The *Railway Age* has frequently cited the statistics of railway passenger service in proof of the decrease in railway passenger travel. Without covering again the ground already gone over in previous issues, some important comparisons of the passenger business now being handled with that of previous years may be made. It is well to remember, in connection with these comparisons, that a loss is indicated not only when there is an actual decrease in the figures, but also when the figures tend to show that the business has been about the same in widely separated periods, or even when there has been a slight increase, for the history of transportation in the United States has been, in general, one of regular growth. When such progress is slackened or stopped it is a sympton that all is not well and that something has brought about a change. Such is the case with respect to passenger transportation on the railways.



One of a Fleet of Trucks Competing for L. C. L. Business Over the 75-Mile Route from Detroit, Mich., to Flint

The statistics of revenue passengers carried and of revenue passenger miles are true indicators of the amount of passenger business that the railroads are doing, the passenger revenues over a period of years being unreliable on account of the effect on them of changes in rates. The year 1916 was the last normal pre-war year. In that year the number of revenue passengers carried on the railways in the United States was 1,005,955,000. Instead of a normal increase, following the growth in the national population, the number of revenue passengers carried in 1924 declined to 931,348,000, although revenue passenger miles increased from 34,585,952,000 in 1916 to 36,125,685,000

in 1924, an increase, to be sure, but a very small increase for an eight-year period. In spite of the decrease in the number of passengers carried, the roads reduced passenger train miles only from 576,094,139 in 1916 to 553,253,000 in 1924, while passenger car miles actually increased from 3,359,599,000 in 1916 to 3,632,032,000 in 1924.

The extent of the loss in passenger revenue may be shown by a comparison of the total passenger revenues during the last few years when rates have remained practically unchanged. From a peak of $1,285,393,081, in 1920, passenger revenues declined to $1,076,615,373 in 1924. Furthermore, passenger revenues have continued to decline this year. The reports for the first seven months of this year showed that there were 70 roads which had total passenger revenues in excess of $1,000,000 for the seven-month period. Of these 70 roads, the passenger revenues of only 10 were in excess of those for the same period last year, while 60 showed decreases. Of the 10 roads which showed increases, 5 are the beneficiaries of the extraordinarily heavy travel to Florida. The only hopeful sign afforded by passenger business recently has been an increase in earnings in September, but this was almost entirely in southern territory.

A further comparison of the statistics of passenger travel for the first seven months of this year with the first seven months of last year indicates that the part of the passenger business which is suffering is the short haul traffic. The loss has not been in commutation traffic, for the number of commutation passengers carried increased from 33,538,000 in July, 1921, to 34,956,000 in July, 1925, while the revenue received from them increased from $5,414,526 to $5,968,218. The loss, therefore, must be in either the long haul or the short haul traffic, and the inference is that it is in the latter. This is indicated by the increase in the average miles per passenger carried which rose from 58.80 in 1924 to 64.01 in 1925. This increase in the average distance each passenger was carried was accompanied by a decrease in the number of passengers carried from 258,586,000 in the first seven months of 1924 to 257,976,000 in the same period this year.

Annual Reports Cite Decrease

If any further proof of a decline in passenger travel is needed it can be found in the statements of the railway presidents in the various annual reports of their operations for 1924. Some of their statements are given below:

Illinois Central—"Passenger revenue decreased 7.17 per cent. The decrease was due to a decline in general business and to motor bus competition in short haul traffic."

Boston & Maine—"The decline in general business, coupled with increased motor competition, resulted in a falling off in total passenger revenue. The decrease in inter-line ticket sales was very much less than the falling off in the sales of local tickets."

Chicago & North Western—"The gross revenues from passenger traffic were 6 per cent less than the revenues from the same traffic in 1923. It is interesting to note that since 1916 the number of intrastate passengers has decreased 50 per cent and that during the same period the number of registered motor vehicles in the nine states in which your company operates has increased by 158 per cent."

Minneapolis, St. Paul & Sault Ste. Marie—"Passenger revenue was $6,575,906, a decrease of $1,090,852 or 14.2 per cent compared with the previous year."

Missouri Pacific—"The decrease in passenger revenue amounted to $1,445,194 or 7.62 per cent."

Wabash—"The decrease in passenger revenue of $466,130 was largely due to local loss in local passenger earnings."

Delaware & Hudson—"Passenger revenues decreased 5 per cent due entirely to a decline in travel resulting from the increased use of automobiles."

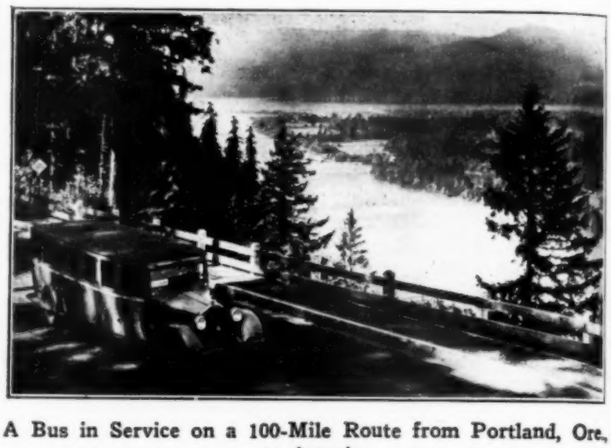
Southern Pacific—"The decrease in revenue passengers carried one mile was nearly 5½ per cent. Of the total decline in passenger earnings 59 per cent consisted of strictly local business which was due to the reduction in travel resulting from the unfavorable crops and business conditions and to the steadily increasing competition of motor vehicles that is no longer confined to short distances."

Erie—"The decrease in gross passenger revenue was 5.03 per cent."

New York Central—"There was a decrease in passengers carried of 1,480,709. This was principally in local passengers other than commutation."

Reasons for Decline

The cause of the decline in passenger travel on the railways is plainly the increased use of automobiles and buses. Of the two, the loss to the privately owned passenger automobile is by far the greater. The number of automobiles in the United States has increased steadily until in 1924 there was a registration of 15,460,649 passenger cars. The increase is going on annually at an average rate of approximately 20 per cent. The saturation point



A Bus in Service on a 100-Mile Route from Portland, Ore., to Astoria

for automobiles has apparently never been reached. One reason for the popularity of the automobile lies in the fact that there are so many miles of good roads in the United States. On January 1, 1925, there were 2,866,061 miles of highways, of which 470,000 were surfaced roads. In many northern localities provision is made for snow removal during the winter and in the south and on the Pacific coast motor vehicles may be used about equally well throughout the year. The improvement of the roads is continuing under federal, state and local jurisdiction, the total expenditure for highways in 1924 being $990,683,770. Railway officers do not need to be told that a not inconsiderable portion of their taxes is thus being used to make it easier for people not to use the railroads.

It is well known that people are becoming more and more accustomed to using their own automobiles in their traveling, even for long distances. On the good roads of today, a motorist thinks nothing of driving 300 miles in one day and shorter trips are made in the motor car as a matter of course. Yearly more and more people are using their motor cars on their vacations instead of the trains. An inspection of the cars traveling over any of the large number of transcontinental highways will show registration licenses from nearly every state in the union every day. The present hegira to Florida is another case in point. The railroads, of course, are handling a record through passenger business. On the other hand, hundreds of motor cars are flowing into Florida from all parts of the country. All this is merely an indication of a change in taste of the traveling public.

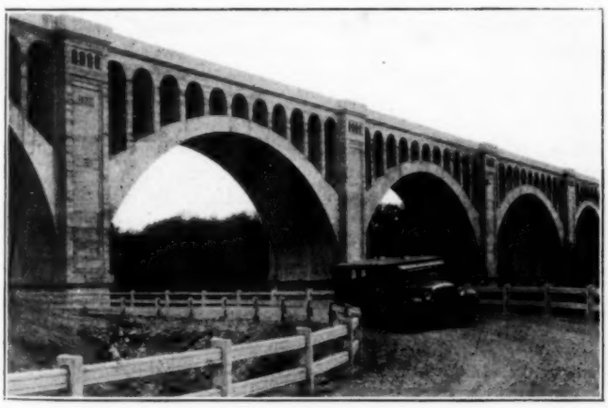
The loss of passengers to the private automobile is probably a permanent loss. About the only hope for its recovery lies in the chance that highway congestion will some day reach a point where motorists in disgust will cease to use their cars and will return to patronage of the railways. With all the money that is being spent to provide better and more roads, however, it is improbable that

this condition will ever be reached. Since the railways have lost a large amount of revenue to the private automobiles, they will have to take such comfort as they can from the fact that their freight revenues have benefited largely from the transportation of materials entering into the manufacture of automobiles and the handling of road building materials and machinery.

Motor Bus Inroads Increasing

Within the last two years the motor bus has become a factor in the loss of railway passenger business second only to the private automobile. It is estimated that there are now approximately 32,000 buses in operation in the United States as common carriers in competition with the railways. They are not confined to any one locality but are spread impartially over every state in the union. Wherever there is an improved road, almost, there is a motor bus route competing with the railways for passengers. One line on the Pacific coast operates on routes over 2,000 miles in length. The number of bus companies now operating and the number of routes they cover are astounding. For example, in the New England district there are about 350 bus companies operating over some 500 routes. In the region north of the Ohio river and east of the Mississippi there are more than 2,700 bus companies operating over nearly 3,000 routes. In the region south of the Ohio and east of the Mississippi there are 1,600 operating bus companies with buses covering 1,800 routes. In the northwestern states there are 400 bus companies operating over 500 routes. In the southwestern states there are 750 bus companies operating over 850 routes. In the three Pacific coast states there are 700 bus companies operating over 1,200 routes.

While bus competition is confined largely to short distances, buses now cover routes several hundred miles in length. They are also invading suburban zones, particularly in the east. Buses are now operating between San Francisco and Los Angeles, Los Angeles and San Diego, Kansas City and St. Louis, Chicago and St. Louis, Chicago and Grand Rapids, Detroit and Cleveland, New York and Philadelphia, and New York and Boston, to mention only a few routes. It cannot be said, therefore, that bus competition is confined solely to the rural districts and to short distances.



The Veteran and the Novice in Transportation. The Big Four Bridge at Sidney, Ohio, and a Bus Operating Between Dayton and Piqua

Invasion of the suburban zones by the buses has as yet been confined largely to the metropolitan section of northern New Jersey and New York. The buses here make little attempt to compete for the great bulk of the passenger traffic which moves on commutation rates on the railways, but appeal to single trip or round trip passengers who have to pay the full fare on railroads. This is particularly a loss for the roads, because it is the only class of traffic in the suburban zone which is really remunerative to them. In the New York district only one of the railroads which operates suburban trains into the city from New Jersey side has a direct entrance to the city proper. The others terminate on the west bank of the Hudson river and the passengers have to complete their journey by ferry or by tunnel. Buses, on the contrary, operate into the city, avoiding the inconvenience oftentimes involved in the railroad trip, making the time for the journey by the bus little if any more than that consumed in riding on the train.

Statements which we have received from a number of the railways indicate strikingly that competition from the buses is both extensive and intensive. The president of an eastern road says: "There are 52 motor bus routes operating in competition with our lines. We operate 27 local passenger train routes and one or more bus routes are in competition with 26 of these." The president of a southeastern road says: "Bus lines directly parallel our present mileage of 2,550 miles to the extent of 32.5 per cent of that mileage and indirectly affect 24.5 per cent of our total mileage. The total bus competition affecting us, therefore, amounts to about 57 per cent, or 1,445 miles." Already of a formidable size, bus competition is still growing and becoming daily a more important factor. Of course not all bus traffic is traffic taken from the trains; part of it has been created by the convenience of the bus. But competition exists, nevertheless, and in large measure at that.

Truck Competition Grows

Competition from motor trucks operating on the highways has not kept pace with that of the motor buses, but it, too, is growing. Although it is difficult to determine the exact extent of the motor truck encroachment upon the railways' freight revenues except in isolated cases, it is not to be questioned that the railways are losing a large amount of freight traffic to their highway competitors. In support of this view are the statements of railway officers whose lines extend into all parts of the country. The president of a middle western road says: "Truck competition has been operating primarily out of the principal jobbing centers and extending to a territory within a radius of approximately 50 miles and with a considerable return movement of livestock to such jobbing points as are packing centers." The president of another western road says: "A recent survey indicates that for a 50-mile radius from our jobbing station we are only handling about 50 per cent as much package freight as we did 10 years ago." An eastern railroad president states: "There are 76 motor truck routes operating in competition with the lines of this country. Of a total of 23 local freight train routes operated, one or more truck routes are in competition with 16." The significant statement of the president of a southern road is: "Where hard surfaced roads have been constructed practically all less-than-carload traffic is moved by trucks for distances up to 20 miles; about 50 per cent for distances of from 20 to 40 miles, and 25 per cent for distances from 40 to 60 miles. With frequency of service and store door delivery, trucks have made large inroads in our local traffic."

The bulk of the motor truck movement is a local short haul transportation of goods. The mileage zone for haulage varies, depending upon prevailing production in the area, shippers' distance from markets, type of highway improvement and the distance between the centers of population. Investigations by the United States Bureau of Public Roads indicate that the principal movement of loaded trucks occurs within a zone of 29 miles or less, this

being demonstrated by test in Connecticut, California, Maine, and Illinois.

Transportation by motor truck falls into two distinct types. One is the distribution of goods having both origin and destination within the local area, and second, the completion by truck of the transportation service provided by railroad and water facilities. Secretary of Agriculture Jardine believes that there is no basis for the theory that the motor truck will compete seriously with the railroads. He has found that the truck's place is in the short haul area and that it is not taking any business from the railroads which they should not be glad to lose. The fact remains, however, that motor trucks have reduced the percentage of milk delivered to Chicago by rail from 94 per cent to 68 per cent, the difference going to the trucks. It is also true that an increasingly large number of truck operators are extending their zones of operation up into the hundreds of miles. Whether they can do this at a profit—and government officers say they can not—is a question which experience only can answer.

Just how serious the competition from the motor trucks has become is indicated by a recent report of the Nebraska State Railway Commission. This report shows that less-than-carload shipments of freight by rail in intrastate business in Nebraska declined from 1,010,000,000 lb. in 1919, just before motor truck competition began, to 705,000,000 lb. in 1924, a loss of 30 per cent. Disregarding the question of whether or not it has taken freight from the railroads which they have never handled at a profit, the fact remains that motor truck competition is present, and that it is growing.

Advantages Offered by Buses and Trucks

The advantages of buses and trucks lie particularly in their economy, under existing regulation and taxation, and their flexibility. They are manned usually by one operator with an occasional assistant in the case of the trucks, and they are of such small capacity that they are able to secure full loads on frequent trips, even in sparsely settled districts. The present condition of the roads in the United States is such that the buses are able to make and maintain speeds of from 30 to 40 miles an hour in the open country so that their schedules are often as fast or even faster than those of local trains on the railways. Trucks have the advantage of being able to collect a shipment at the shipper's door and deliver it at the door of the consignee. In this connection it is to be noted that motor buses in general are operated on regular routes with scheduled hours of departure and arrival, but trucks very rarely have schedules, making their pick-ups and deliveries as the orders come in.

As far as the public is concerned, buses and trucks offer many advantages. The modern bus, which is low hung and equipped with cushioned spring seats, and operating on smooth concrete roads, is comfortable to ride in. Buses have the further advantage of frequency of schedule and in most cases can be stopped at any point along their route so that passengers do not have to go out of their way to board them at the terminals. There is an obvious advantage to shippers in being able to load their consignments on trucks at their doors and have them delivered without re-handling to their destination.

In the matter of rates, there is no rule that is followed. In some localities bus rates are lower than those on the railways and in others they are higher. In general, the difference is so small either way that the passengers do not seem to notice it. It is difficult to make a comparison between rates for freight on the railways and the rates on the trucks but it is probable that truck rates are higher in the majority of cases. On the other hand, shipments such as household goods can often be moved from one point to another more cheaply by truck than by railway when the costs of crating and of delivery to the railroad and from the railroad to final destination are taken into consideration.

Lack of Regulation Aids Buses and Trucks

One very important reason for the phenomenal growth of the motor bus and truck transportation business is the lack of any extensive regulatory restraint. This lack of regulation and its companion lack of laws compelling common carriers that use the highways to pay an equitable amount for the privilege, have had the effect of permitting the buses and trucks to compete with the railways on an unfair basis. This lack of regulation and of adequate taxation has also induced competition of the most cut-throat variety, permitting fly-by-night bus and truck operators to skim the cream of the railway's business without accepting any of their responsibilities as common carriers.

There is today no regulation of motor vehicle common carriers engaged in interstate business. The Supreme Court of the United States in several decisions, notably in the cases of Buck vs. Kuykendall and Bush vs. Maryland Public Service Commission, both decided on March 2, 1925, has held that all state laws regulating commercial transportation by motor vehicles to the extent that they attempt in any way to restrain persons or corporations from engaging in such transportation are invalid with respect to interstate commerce. Thus the only restrictions which are made upon bus and truck operators are those of the various state commissions. On January 1 of this year, only 31 of the 48 states had laws permitting their public service commissions to control the granting of certificates of public convenience and necessity, the regulation of service, and the fixing of rates and fares. The remaining 17 had no such laws and no regulations whatever. As a result, in these 17 states any man who has enough money to make the first payment on a motor bus or truck and to pay the state license fee, usually only a few dollars, can engage in the business of carrying passengers and freight in competition with the railways. He can go and come as he pleases, charge such rates as he thinks the traffic will bear, suspend service when convenient to himself, and render an accounting to no one.

Of the 31 states whose public service commissions have been given control over the highway carriers, most have the same general control over the granting of certificates of public convenience and necessity, regulating service and fixing rates and fares. Some have the further authority to fix routes over which the applicants must operate, others require monthly reports of the operation of buses and trucks, and still others prescribe safety rules.

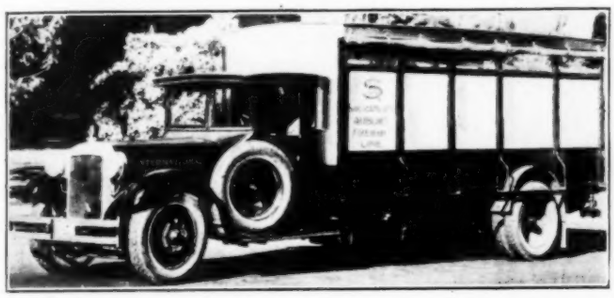
There are many kinds and varieties of methods of taxation of motor vehicle common carriers, but practically all of them compel the payment of ridiculously small amounts for the use of the public highways. A number of the states have no taxes whatever other than those applicable to all motor vehicles. Conspicuous among these are Delaware, Indiana, Kansas, Missouri, Nebraska, New Hampshire, South Carolina, Utah, Vermont, Wyoming and the District of Columbia. About an equal number charge flat rates of $5 to $350, in addition to the regular registration fee for the privilege of operating over the state roads although the number of states assessing the larger amounts are decidedly in the minority. The general rule is to tax buses and trucks from $10 to $25, depending on their size and on whether the units have pneumatic or solid tires. In some cases there are regulations which compel the operators to pay in proportion to their use of the state roads, in the form of a tax on gross receipts or on passenger miles and ton miles.

Few States Have Full Control

In some of the states more complete regulation is in effect. In California, for example, the railroad commission has the power to grant, refuse, suspend, revoke or amend certificates of public convenience and necessity, prescribe service or extensions thereof, fix rates and fares, supervise fiscal affairs and authorize the sale or lease of the certificates. In that state, in addition to motor fuel taxes and the personal property tax, there is a registration fee of $3 and special fees ranging from $5 to $40 depending on the weight of the vehicles and the kind of tires with which they are equipped. In addition there is a tax of 4 per cent on gross receipts, less the amount paid as municipal fees and taxes.

In Iowa the railroad commissioners have similar powers and can require monthly reports of ton miles operated and prescribe certain safety rules. The taxes in this state, in addition to regular registration license fees, provide for a special fee of ⅛ cent per ton mile for pneumatic tired vehicles and ¼ cent per ton mile for solid tired vehicles.

Maryland has an elaborate system of taxation. In addition to the personal property and fuel taxes, a number of fees are assessed. Passenger vehicles and freight carriers are divided into three classes each. Class A pas-



Motor Truck Competition Has Assumed Impressive Proportions. This Truck is a Carrier of L. C. L. Freight Over a 36-Mile Route

enger carriers weighing 3,000 lb. or less are taxed 1/20 per cent for each passenger seat multiplied by the total number of miles operated. Class B buses, weighing over 3,000 lb. and less than 7,000 lb., if equipped with solid tires, or 8,500 lb. if equipped with pneumatic tires, are taxed 1/18 cent each passenger seat multiplied by the total number of miles, while Class C conveyances, weighing over 7,000 lb., if equipped with solid tires, or over 8,500 lb. if equipped with pneumatic tires, are taxed 1/7 cent each passenger seat multiplied by the total number of miles. Class X, freight carriers, weighing three tons or less gross, are assessed 1/6 cent each ton mile multiplied by the total number of miles. Class Y, trucks weighing over three tons gross and not more than 14,000 lb., if equipped with solid tires, or more than 23,000 lb. if equipped with pneumatic tires, are taxed twice that amount and class Z, trucks weighing over 14,000 lb. gross and not over 23,000 lb., if equipped with solid tires, three times that amount. A similar method of taxation is in effect in Virginia.

Suggestions for Regulation

Two organizations, the American Electric Railway Association, and the National Association of Railroad and Utilities Commissioners, have recognized that a uniform system of motor vehicle regulation is desirable, and have advanced suggestions as to the form in which this regulation should be adopted. That of the utilities commissioners provides for regulation of interstate highway transportation by the Interstate Commerce Commission through the agency of the state commissions. The state commissions would thus be made agencies of the federal government. The bill proposed by a committee of this organization provides that interstate motor vehicle transportation should be subjected to the same character of regulation as that imposed upon intrastate carriers, accordingly providing for a securance of certificates of convenience and necessity, and reasonably adequate service at reasonable rates. It likewise provides that each certificate holder shall file a bond to pay any damages to persons or property arising out of the transaction of the business authorized by the certificate. Motor carriers are divided into two classes for purposes of regulation under this plan, Class A carriers being those engaged in the transportation either of persons or property between fixed termini and over a regular route, and Class B carriers embracing all others including the roving bus and the roving freight truck. The plan also provides that rates shall be filed with the state boards and that complaints as to the rates may be made to those bodies and investigation shall be made upon the complaints.

A Public Subsidy

The conclusions of the American Electric Railway Association are helpful since they set forth in full the bill which they would like to see made the law for the regulation of the highway carriers within the states. At the outset it is recognized that inadequate taxation for the use of public highways by motor vehicle common carriers results in a public subsidy for such carriers. From this viewpoint it was determined that a ton-mile tax for all motor vehicle common carriers, which would as nearly as possible return to the highway fund an amount that would represent the actual deterioration of the highways caused by them, should be levied. The rate per ton-mile recommended, based upon as accurate data as could be obtained, was one cent per ton-mile for pneumatic tired vehicles and 1½ cents per ton-mile for hard tired vehicles. It is recognized that future studies may reveal the necessity of a revision in the figures recommended.

Other sections of the bill suggested by the A. E. R. A. give the state board the necessary powers of regulation; prescribe that reports of operation shall be made each month, provide for the filing of a liability insurance bond, establish certain rules for safety, and provide for punishment of infractions of the law.

Commissions Usually Approve Buses

In the administration of the laws now in effect, the state commissions seem inclined to adopt a sympathetic attitude toward the railroads, although they are favorable to operation on the highways and do not hesitate to approve it. The instances of state boards refusing certificates of convenience and necessity to bus and truck lines on the ground that adequate service is already provided by the railroads are rare. The statements of some of the railways in regard to conditions with respect to the attitude of the public and of regulatory bodies are interesting. Quotations from some of these are given below.

A middle western road—"We believe that the public and regulatory bodies in our territory are generally inclined to favor such highway transportation companies as appear to be in a position to render satisfactory, regular and permanent service. This logically indicates that they would give preference to the larger and better organized companies. As to choosing between different forms of transportation a number of instances have occurred where certificates of public convenience and necessity have been refused because of the public desire to retain existing rail service."

A southwestern road—"The attitude of the public and

regulatory bodies towards bus line operation has generally been favorable. However, there is a growing tendency to increase taxes for the operation and also to place more restrictive legislation with regard to responsibility for personal injury and damage to property which will eventually prove more or less of a check on bus or truck operation. There has also been some indication that communities are becoming convinced that continued patronage of the trucks is causing a falling off in traffic from branch lines of railroads and may possibly result in the railroads asking for their abandonment. We have recently had some indication of the recognition of this by communities who have taken united action to show their support of the railroads."

More Testimony

A western road—"Generally speaking, the public and regulatory bodies express the opinion that buses and trucks should be regulated and pay a reasonable proportion of the taxes for the upkeep of the roads but not to the extent of confiscation. However, there is a certain proportion of the people, more particularly merchants in small communities, who realize that buses and trucks have the effect of causing persons to go to the largest communities for the purpose of trade, and they quite naturally are more inclined toward the regulation of buses and trucks than the citizenship generally."

An eastern road—"Regulatory bodies seem to lean toward the standard transportation companies when they enter the field but seem to treat each application for approval of certificates of public convenience on its own merit."

An eastern road—"The attitude of the public is that bus and truck lines are desirable. The damage to the highways by these heavy vehicles and the loss of revenue to the state by reason of the decrease in railway earnings on account of this competition are not yet fully appreciated."

A western road—"The general public in a number of instances has come to our support and has objected to bus and truck service on the ground that the territories concerned were well served by the rail lines and that the rail lines should be protected, but as a general rule the public is favorable towards the highway carriers. Public sentiment has favored requiring highway carriers to pay taxes commensurate with their use of the highways and this has resulted in raising their taxes in California although they still pay much less proportionately than the rail lines."

A middle western road—"In the territory served by our lines the citizens and business men generally have almost unanimously joined us in opposing the bus lines."

If strict regulation and adequate taxation of the highway carriers are adopted, what effect will this have upon them?

The required machinery of regulation and accounting would be such that the one-man carrier might be eliminated, concentrating the highway transportation business into a smaller number of large companies. Regulation would also have the effect of defining sharply the limits within which buses and trucks can be operated in accordance with economic laws. It is very desirable, from the standpoint not only of the railroads but also of the public, and of motor common carriers that the field of the bus and truck should thus be delimited with as little delay as possible. Adequate regulation and taxation may tend to reduce the extent of competition between the highway carriers and the railways, but it will have the effect of strengthening the highway competitors that remain.

How bus and truck competition is being met by the railways will be described next week.

Railways Eliminate Waste

WASHINGTON, D. C.

ELIMINATION of waste in railway transportation by the provision of adequate facilities and better methods is given first place in a review of national progress in the elimination of waste in the annual report of Secretary Hoover of the Department of Commerce. The report is made up of condensed statements by department officials in touch with different fields of activity, that by Eugene S. Gregg, chief of the transportion division, being in part as follows:

"One of the most important contributions to the elimination of national waste has been the remarkable improvement in railway transportation during the past five years. The first factor in that improvement was the provision of adequate transportation itself. The periodic car shortages of many years past have practically disappeared, although the tonnage loaded has increased more than 25 per cent since 1921. The waste imposed on carriers and public in those periods of shortages in transportation was far larger than is commonly supposed. The derangement of production and employment in all industries, the widening of prices between producer and consumer, due to repeated strictures in transport which created glut in supply and scarcity in consumption, amounted to hundreds of millions annually.

"Some very important economic effects have resulted from full, prompt, and reliable delivery of goods. The necessity for carrying large stocks as a protection against transportation failure has largely disappeared.

"A second improvement, aside from direct increase in facilities, has been the very great and fundamental increase in efficiency of operation. Since 1921 the average weekly car loadings have increased from 693,533 to 986,475, the number of miles per car per day from 22.4 to 26.9, the average trainload from 656 to 731 tons. The traffic is being carried with relatively less employees, the ton-miles handled per employee being 221,203 in 1924 as against 182,477 in 1921. This fine accomplishment of the railway managers has been distinctly aided by the large measures of cooperation with shippers established by the railways through effective regional committees.

"There have been many other savings in transportation during the past few years in addition to those accomplished in the operation of the carriers. Better packing has been an important factor in the 48 per cent decrease in railroad claims between 1921 and 1924, a decrease of from approximately 92 to 48 million dollars. Standardization of the forms used in associated industries of transportation has also had its effect in reducing the distribution costs. Special studies have been made by the department during the past year in the handling of certain classes of freight. The working out of the suggestions arrived at by these special studies has been a contributing factor to the lessening of terminal delay.

"There are many problems yet to be solved in transportation, notably the coordination of railway and water facilities and the working out of the economic relation between motor truck and less-than-carload railway distribution. Further study in domestic packing and efficiency in terminal loading and unloading of railway cars will bring good results. Our terminal facilities for handling perishables (not wholly a railway question) must be greatly improved. The astonishing growth in consumption of fruit and vegetables has created difficulties in terminal distribution which very greatly increase distribution costs and create great wastes in these commodities through deterioration. The cost at the terminal markets between the door of the car and the door of the retail store often exceeds the entire freight."

An Optimistic View of the Railroad Situation*

"Railroad health is a national asset," and in most respects the railroad situation is now healthy

By Carl R. Gray
President Union Pacific System

IN no other assemblage in America could an equal number of men represent such an aggregate railroad investment as is represented here. Fifty-two life insurance companies have 93 per cent of the total admitted assets of all life insurance companies in the United States. In 1924 these fifty-two companies held $2,109,621,000 of railroad securities, representing over 21 per cent of their total admitted assets.

Unfortunately the average earnings from railroad securities have not had an appeal in our western country comparable with that of local enterprises, either measured by return or speculative opportunity, and we do not, therefore, have the advantage enjoyed by our eastern brethren of a local clientele so largely composed of those directly interested in the financial results of railway operation. This is a great handicap. There is no probability of an early change, however, because the west still presents opportunities for the man with capital, courage, and initiative, far beyond the restricted, though perhaps more sure, realization from seasoned railroad investments.

Railroad securities represent such an enormous reservoir for investment that they should always be a preferred investment for life insurance companies. In these circumstances the health of the railroad business, present and future, is properly an element of great moment to them.

Any industry that is in a healthy condition is a national asset if it produces or merchandises some commodity, or renders some service that contributes to the intellectual or material well being of the people. Ours is a vast country. The railroad industry has been developed on a larger scale here than in any other part of the world, and it would be hard to exaggerate the contribution it has made to the intellectual and material welfare of the nation. The railroads have been for almost a century and still are the chief means of communication between all our widely scattered communities. They carry all the mail, newspapers, magazines and books excepting the relatively small volume carried by airplane and other means of transportation which really serve as auxiliaries to the railways. It is difficult to conceive how all parts of this great democracy could have been provided with the information, and brought to do the thinking along common lines regarding public affairs necessary to hold them together in a single great nation without the means of speedy and complete communication that the railroads have afforded.

However, the paramount service rendered by our railways has no doubt been that of making possible the vast increases of production and commerce which have occurred, and which have resulted in all classes of our people attaining a much higher standard of living than ever has been attained in any other time or place. It is obvious to every intelligent man that the present material well being of the American nation could never have been achieved without the unprecedented and unparalleled development of cheap rail service that has occurred.

The physician whom we employ to guard our health must not confine himself to an examination of present conditions, but must look into the future and anticipate conditions with which we, like all other human beings, will be confronted. So it is with the investor, particularly the investor in securities like those of the railroads, which have long deferred maturities; he must draw upon his experience and anticipate possibilities that portend either good or evil to any property in which he invests.

That the railroads are the arteries of the nation has been so oft repeated as to become a trite expression. That there are other transportation arteries, such as the motor, the air transport, and waterways, is undeniable; and that they present elements of menace to rail carriers is true. It is essential that there be an analysis of these factors in their relation to the health of the rail system.

The investor is vitally interested in the management of his properties. Are the railroads efficiently, economically, and honestly managed? Have they been, and are they measuring up to their responsibilities as arteries, by maintenance, and by improvement and betterment? What is going to be the ultimate effect of motor, air, and water competition? Are there in existing legislation and administration disquieting tendencies? Is rail transportation, in fact, absolutely essential? Because, after all, if it is not, and if it does not present in its very nature an unique and distinctive value, then there are elemental weaknesses which threaten the integrity of railroad securities. Again, has there been or is there a public appreciation of the importance of the rail carriers in the national economy?

Management and Personnel

Railroad management today is in the hands of men almost without exception trained in the business from the very bottom. That they have developed through different channels adds to, rather than detracts from, their value, because through the sympathetic cooperation between systems which obtains today, their combined knowledge is utilized in the solution of the manifold problems constantly arising in the improvement of operating methods, in the involved rate matters, and in the vital question of public relationship. Never before have we had so nearly a coordinated national railroad system. This country has seemingly adopted a policy of private ownership with governmental regulation, and the managements have adjusted themselves to that method.

No other business is conducted in such a pitiless light of public knowledge of its every detail. Dragging themselves out of the welter of the World War's aftermath of confusion and dislocation, in which they were among the

*An address delivered before the National Association of Life Insurance Presidents in New York City on December 3, 1925.

innocent sufferers, the railroads have progressed in five years by efficiency of management to the point where it can justly be said that never before in our history has the movement of passengers been so comfortable or dependable, and the freight service so effective and satisfactory, the peak of business in each year since 1920 (except during the strike period of 1922), having been handled without congestion of any kind, and without car shortage except in sporadic instances, due to requirements of specialized equipment, always promptly relieved.

But management alone could not have accomplished these satisfying results. There has been a most gratifying response from the rank and file of railroad employees. Never before has the esprit de corps been higher and pride of men in their individual roads so apparent. No finer body of individuals could be found than those who man American railroads. Carefully selected originally, having to undergo rigorous tests both physical and mental as a prerequisite to employment, engaged in a business hazardous at its best, alert to cooperate in the advancement of the art to its highest possible development, giving their entire lives to the industry without thought ordinarily to any other, no resume of the accomplishments of the railroads would be just or complete without an honest acknowledgment of their effective cooperation.

Last, but by no means least, is the contribution by the public itself. In season and out of season the Regional Advisory Boards, composed of shippers, state commissions, chambers of commerce, etc., have labored, in collaboration with railroad officers, first to understand the carriers' problems, and then with whole-hearted cooperation to aid in their solution. It would be difficult to overemphasize the value of their assistance. Again, the American Railway Association, through its Car Service Division, and through its unwavering support by railroad management, has been able to utilize the national car supply in such an effective way as to make car shortages only a memory.

There is, therefore, in the factor of management, every assurance that it will measure up to requirements in initiative, resourcefulness, and courage.

Maintenance, Improvements and Betterments

For a decade there has been very little new railroad construction. In a large sense the trunk lines are provided; future construction will be largely supplementary to existing trunk lines. Maintenance is upon a higher basis, generally speaking, than at any previous period, and with particular reference to equipment, a larger proportion of both locomotives and cars is in serviceable condition. In fact, such proportion as is unserviceable represents the amount needed to keep shops in operation and to insure continuity of employment. Expenditures for additions and betterments for a five year period represent almost an ideal, and have been made in the belief that an informed and aroused public conscience would see that the rail carriers would have just compensation therefor.

Speaking for no particular railroad, but from a lifelong acquaintance with the railroads and a close knowledge of their condition generally, I am justified in giving you the assurance that from all physical angles the carriers never were so thoroughly equipped to meet and to anticipate the needs of commerce in this country.

Competition from Other Methods of Transportation

The use of inland waterways for transportation is not new. In all but the southern part of the country it can be utilized seasonally only, and only a portion of this season extends into the period of heaviest traffic. After many years of experience, inland water traffic is confined largely to tonnage such as coal, ore, and grain, and in practically every case of moment the tonnage already has or ultimately will seek rail transportation. The great stretches of country where inland waterways can never be developed, the vast number of commodities, notably those of a perishable character, which demand expedited service, and the steady growth of the country itself and its traffic, minimize the danger of any ultimate or serious deflection of railroad earnings to inland waterways unless the government should lend itself to a wholly unwarranted river improvement program certainly not now contemplated nor to be seriously apprehended.

Coastwise, a serious outlook presents itself. The coasts are more thickly settled proportionately than the interior, and their industrial development is much greater. Competition can fairly be said to be untrammelled. Steamships have not been content with strictly coastwise traffic, but have reached back five and six hundred miles into the interior from both coasts, and have made serious inroads into the traffic of the transcontinental railroads. And I do not believe that their business is being profitably handled. Just such competition as nearly proved the ruin of rail carriers in the eighties and nineties is present here in its most virulent form. American shipping is given the monopoly of coastwise business,—and I think properly so,—but with this privilege should go responsibility as a common carrier, and regulation equally as thorough and effective as is imposed upon our carriers by rail. This cannot be accomplished and a uniform treatment insured unless and until the coastwise carriers are subjected to the jurisdiction of the Interstate Commerce Commission.

Motor transport has also made serious inroads into short-haul passenger and freight traffic, and as hard surface roads are extended this will measurably increase. We should bear in mind, however, that up to this time most of the paving program has been for roads which actually parallel railroad mileage, because the latter usually follow the shortest distance between communities, and that a material part of this construction has been accomplished, therefore the initial force exerted in diversion of traffic from rail to motor has been greater relatively for this reason. Future highway improvements will tend toward lateral, rather than parallel, lines, and can conceivably become feeders rather than competitors of rail carriers.

A fifty mile radius fairly limits remunerative motor truck activity. In that field it will continue to exert a strong and probably growing influence. Motor transport in some form has come to stay. In many respects it can be utilized to supplement rail transportation, and will ultimately fit into its proper relation to the scheme of things. Unquestionably some of its activities today, in the wholly natural glamor and enthusiasm of new departures, are conducted at a financial loss, but experience will demonstrate where it is and where it is not in its proper sphere. The American people are entitled, in the last analysis, to the best and cheapest transportation, all elements of cost considered, which can possibly be afforded. Both water and motor have their proper place, and to oppose either, when they are clearly demonstrated to have these advantages, is to run counter to a natural law.

The regulated railroads have, of course, a very real difficulty in attempting to compete with the unregulated motor busses and motor trucks, and with the unregulated water carriers, particularly those operating through the Panama Canal. In the nature of things we may well expect that the unfairness of this situation will be brought home to those in authority and appropriate action will be taken by them to the end that there may be competition

between these different agencies of transportation on fair terms. While I do not underestimate the character of the competition we are now meeting and shall be forced to meet in the future, we are fortunate in the fact that the country is growing rapidly, its rail tonnage having more than doubled in the past twenty years, and I think there is justification for a feeling of optimism in regard to the railroad situation in the coming years.

Air transport is in its infancy; no one can with present knowledge gauge its potentialities. It will take an increasing amount of the lighter and most important packages where time is the essence and cost a negligible factor, but I cannot bring myself to regard air transport as constituting a real menace to the railroads.

Summing up this question, therefore, I do not believe that these competitive transportation methods actually contain such a menace as individually or collectively to threaten railroad health.

Legislation and Public Administration

In the foregoing summary I have striven to cover certain features which instantly come to mind in connection with any consideration of investment in railroad securities. I have been actively engaged in railroad work for forty-three years. This service antedates the passage of the Interstate Commerce Law, and covers the evolution of federal regulation of railways from the period of no control to that of practically complete federal regulation. Aside from the important feature of net return, a detail which I will touch upon later, the existing law contemplates for the first time a sympathetic regulation which protects as well as punishes. There are elements in the law which are unfair, such as recovery of earnings after they have been secured upon a reasonable rate basis; still, one must concede that, granting the premise of the framers,—with which I do not agree,—there were arguments for the inclusion of this and other features. In the judgment of most railroad men we have a constructive measure which, fairly and intelligently administered, is a remarkable step in advance.

I hold no brief for the Interstate Commerce Commission, but I can say this: that for nearly forty years they have progressed by deliberate and painstaking efforts to a point in public esteem second only to the Supreme Court of the United States. They are without doubt the hardest working of our public bodies, and this is perhaps their greatest element of weakness; but of their honesty of purpose, high and courageous character, there can be no question. Some appointments have been made which savored of class distinction initially, but the atmosphere of patriotic service which animates the commission has in most cases overwhelmed any individual bias, and, in fact, the special pleader has several times grown in these new environments to leadership in disinterested public service.

There is no pomp and circumstance about the commission. Each commissioner is readily accessible to and frequently eager to discuss informally with shipper or railroad man questions of moment, and the frequent sharp divisions in the commission are evidence of the care with which findings are considered by the individual members, because they realize the far reaching effect of precedents. If, therefore, the commission itself, with its wealth of information and evidence, is frequently divided, it is little wonder that a feeling of dissatisfaction sometimes arises with respect to decisions. I am afraid there is too often a condemnation of the commission as inert and unsympathetic. I would not be candid if I did not give this frank expression of my conception of them.

The greatest element of danger is in legislative interference. An example was the law strongly urged in the last Congress, directing the commission to cancel the extra charge for passengers occupying Pullman cars, disregarding the fact that the commission, after thorough inquiry, had dismissed the complaints against this justifiable charge. Another is the so-called Hoch-Smith resolution requiring the commission to revise the entire rate fabric, with the declared intention of reducing rates on agricultural products where practicable, and protecting the needs of the carriers by increases on other commodities.

In a broad general sense legislation and administration tend for encouragement rather than discouragement in the matter of railroad health. That medical instead of surgical methods are generally followed has its advantages as well as disadvantages. The health of the national system of transportation is an announced principle of government.

Is Railroad Transportation an Essential?

In the year 1920, following the return of the railways to private control, Secretary of Commerce Hoover has estimated that congestion and car shortage cost the country one billion dollars. If this is true,—and I do not think it an over-estimate,—good and dependable railroad service for over four years has saved the country an amount annually more than the aggregate net earnings of the railroads themselves. More than this, by prompt and efficient deliveries, investment in freight in transit and in material stocks has been reduced in an aggregate staggering in amount.

Charles S. Keith, of Kansas City, formerly president of the Southern Yellow Pine Association, has estimated that the reduction of inventories in the lumber industry alone since 1923 has amounted to $600,000,000. He has pointed out that lumber shipments are about 8½ per cent of total shipments, and that if inventories in other lines of business have been correspondingly reduced, the aggregate reduction has been about seven billion dollars.

The exact amount of this reduction of inventories can not, of course, be ascertained, but that within the last five years it has been several billions of dollars there can be no question. The capital thus released has become available for other purposes, and its release is equivalent to a corresponding increase in the total available capital of the country. It is highly probable that the amount of capital that the improvement of transportation has made it possible within the last five years to take from the inventories and use for other purposes is equivalent to at least one-third of the total property investment of all the railroads in the United States.

Reports from all western sections say uniformly, "the country is still buying for its immediate needs only." This is too often erroneously interpreted as an indication that heavy buying must inevitably result. The real underlying reason is found in prompt and dependable transportation.

The country has adjusted itself to these marvelously improved conditions. Even a small let-down in transportation efficiency would call for vastly greater inventories and would freeze a material portion of the liquid capital now freely used with such striking effect in general business activities. This need not be feared, however, as the railroad men are squarely on their feet, with an even greater appreciation than ever of the vital importance of their mission. We have built up in this country with locomotives and cars of nearly maximum capacity a system of transportation unique in character and purely American in its adaptability. The unit of freight transportation, the car, is of all intents and purposes pooled, and by united action is shifted from one section of the country to another in such manner as to give the whole

ownership of cars its greatest possible effective value.

Rail transportation, dependable, efficient, is an essential: it can not be dispensed with, and will remain the premier artery of the nation's commerce.

Public Appreciation

Never in my experience has there been a better or more informed public appreciation of the supreme importance of rail transportation. The west has in past years presented some lurid examples of radical thought and legislation. Two matters can be quoted as indicating the change in sentiment. In all the western states the legislatures met in January of this year: met and adjourned without the passage of a single anti-railroad law.

Again, in the pending application for a freight rate increase by western railroads, such criticism as has been made is not directed against an advance *per se*, but the perfectly human and understandable contention that some other community or commodity should bear the burden. In general the attitude is that the railways are entitled to a fair return: the contention is addressed mainly to the distribution of the load. Newspaper comment has not been unfriendly, but on the whole has reflected fairly the general attitude outlined above.

For five years the railways have consistently and persistently, by addresses and through advertisements, presented the railway problem to the public. Unquestionably this method has played an important part in the improvement of public relations. A number of roads maintain public relations departments, continuing the contacts already formed and insuring their improvement and development.

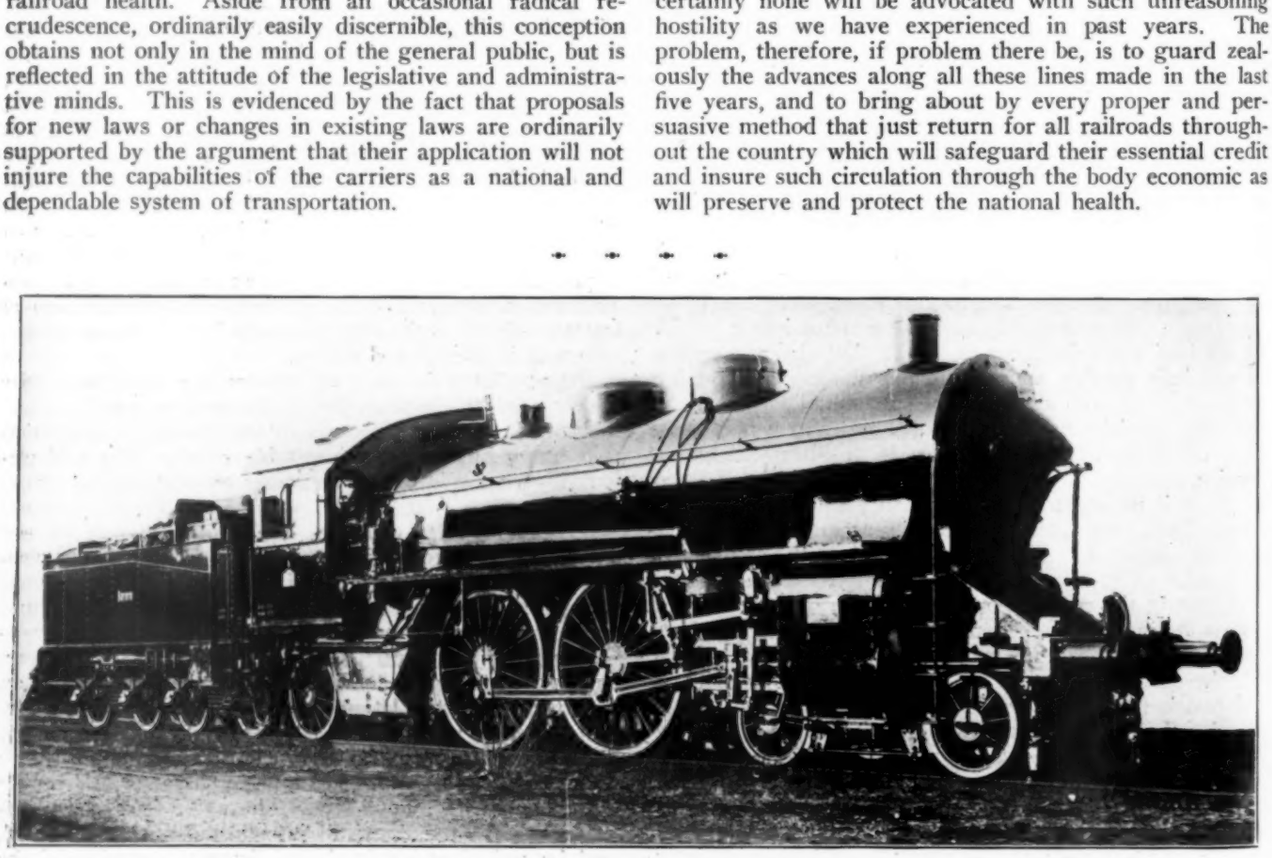
It can for all these reasons be justifiably stated that there now exists a real public appreciation of the fact that national economic health rests fundamentally upon railroad health. Aside from an occasional radical recrudescence, ordinarily easily discernible, this conception obtains not only in the mind of the general public, but is reflected in the attitude of the legislative and administrative minds. This is evidenced by the fact that proposals for new laws or changes in existing laws are ordinarily supported by the argument that their application will not injure the capabilities of the carriers as a national and dependable system of transportation.

While I have endeavored to prove that railroad health is not only a national asset, that there is as never before a national appreciation of the fact, and that unreasoning prejudice no longer has an effective appeal, I do not desire to convey the impression that as a corollary there is at this time such a condition of railroad health as unqualifiedly to feel assurance of the patient's complete recovery. Nothing short of the realization of a fair return can justify this assurance. It is just to say, however, that with this vital exception, all other conditions affecting the railroad situation are favorable.

The net earnings upon actual value in railroad investments have not yet approximated the fair return contemplated in the Transportation Act. Certain regions, notably the west, are still far behind in that respect, and are now applicants for consideration. "The mills of the gods grind slowly," and this has its counterpart in administrative machinery. The fundamental facts are, however, that the return, starting from the year 1920 with almost a minus quantity, has slowly but surely progressed toward the "fair return" fixed by the commission; that investment in railway securities is coming back into its own, and that while it will never again present the speculative appeal afforded by the industries, it should and can be the proper investment for savings; and that this is being more and more accomplished is demonstrated by the increasing number of smaller investors both in stock and bonds. To my mind the future is hopeful in all these respects.

A sympathetic appreciation by the public will not alone suffice; it has to be translated into action. But we will not have a wholly satisfactory condition until a dependable return is realized.

So far as can now be seen we are not threatened with any material changes in the law governing railroads; certainly none will be advocated with such unreasoning hostility as we have experienced in past years. The problem, therefore, if problem there be, is to guard zealously the advances along all these lines made in the last five years, and to bring about by every proper and persuasive method that just return for all railroads throughout the country which will safeguard their essential credit and insure such circulation through the body economic as will preserve and protect the national health.



A Bavarian Atlantic Type, Built by Maffei, Munich

An Example of Winter Construction, the Susitna River Bridge on the Alaska Railroad

Is Winter Work Profitable?

An answer to this question based on extended experience with construction at low temperatures

By A. M. Bouillon

TWENTY years of construction experience acquired largely in countries subject to severe winter climate, 14 of which were spent on the Grand Trunk Pacific in Canada, have definitely demonstrated to the writer that a great deal of construction can be carried on profitably during the winter season. This was notably the case on bridge substructures requiring river piers which, in all instances where the work was properly handled, cost less than similar work done during the summer. Even in most of the cases where the actual cost of winter work figured higher, the fact that the plant and the organization were kept going proved to be of decided advantage, especially at points where difficulties might be encountered in recruiting a competent staff when work was resumed in the spring.

It is not the purpose of this article to extol the merits of winter construction to the detriment of construction carried on during mild weather, but to present facts drawn from actual experience on both summer and winter work on the construction of railways, with particular reference to bridges involving the construction of river piers for the purpose of showing that much construction can be carried on in winter for less money than in summer, and also that in no case have the results on well managed work shown any excessive difference in the cost.

Winter Steel Erection Imposes No Serious Difficulties

Steel erection is entirely exposed; nevertheless it is carried on in winter and sometimes in very severe cold. The steel erection for the 504-ft. truss span on the Susitna River bridge on the Alaska Railroad was done entirely during the winter under temperatures as low as 42 deg. below zero. The coldest weather during which riveting was ever done, so far as the writer knows, occurred one day in January, 1921, at this bridge. The temperature in the morning was 40 deg. below, rising to about 25 deg. below by noon and going to about 30 deg. below by four p. m. This work was done by three rivet gangs belonging to the American Bridge Company's erection crew, nearly all of whom were southerners. The number of defective rivets found in the work of these gangs was no greater than the very low average found throughout the entire job. The whole of the steel erection on this bridge was done as quickly and efficiently as any average work of a similar nature could be handled in the summer in the same number of working hours. The steel erectors worked contentedly, kept in excellent health and suffered only a few minor accidents. There was not a single case of serious accident or illness throughout the whole job either in the foundation gang or the steel erection crew.

Considerable steel erection has been carried on during the winter months on bridges on the Grand Trunk Pacific and on other Canadian railways, principally west of Winnipeg. At some of these bridges the ice made it possible to drive the piling for the falsework much quicker and much more economically than could have been done in summer, while in some cases, notably at the crossings of the Saskatchewan rivers, no falsework could have withstood the pressure of logs and debris brought down by floods if the erection had been planned for either the spring or fall season, which would probably have necessitated the use of modified bridge designs and more expensive erection methods.

In constructing the substructure of the South Saskatchewan River bridge near Saskatoon, the long Battle River viaduct near Wainwright, the North Saskatchewan River bridge near Edmonton and the Pembina bridge, 60 miles west of that point, all on the Grand Trunk Pacific,

work on cofferdams, excavation and concrete was carried on continuously summer and winter, regardless of climatic conditions. Concrete was placed at temperatures lower than 40 deg. below zero. Night work was carried on at one of the bridges in order to insure readiness for the steel in the spring and the lowest temperature reached on that work was 68 deg. below zero.

What Are the Difficulties

Consider first some of the assumed difficulties and estimated hazards of winter construction that have been put forward as deterrent influences. It has been claimed that winter weather has a retarding effect upon labor efficiency; that men are less active, their movements being impeded by heavy clothing; that slippery footing on ice and snow increases the risk of accidents; that there is greater danger of illness and that attendance to work, particularly of men on portions of the job most exposed to the weather, is not dependable, with the liability that these intermittent and usually unannounced absences create gaps in the ranks that may greatly reduce the efficiency of the rest of the gang; also that on days of sleet, blizzards and intense cold it may be necessary to tie up the work and probably have the gang employed on unproductive items such as shoveling snow, cutting ice or removing sleet from cables, forms, etc.

It is claimed that all machinery, particularly in a gasoline-operated plant, works less efficiently and that tie-ups in some units of the job may happen frequently and cause considerable loss of time with a corresponding increase in production cost. Sleet, which is a factor in some districts, accumulates on cables, pulleys, blocks, etc., at times causing serious havoc, breaking cables and tying up the work. It is also claimed that cold weather makes it harder to operate machines and hand tools.

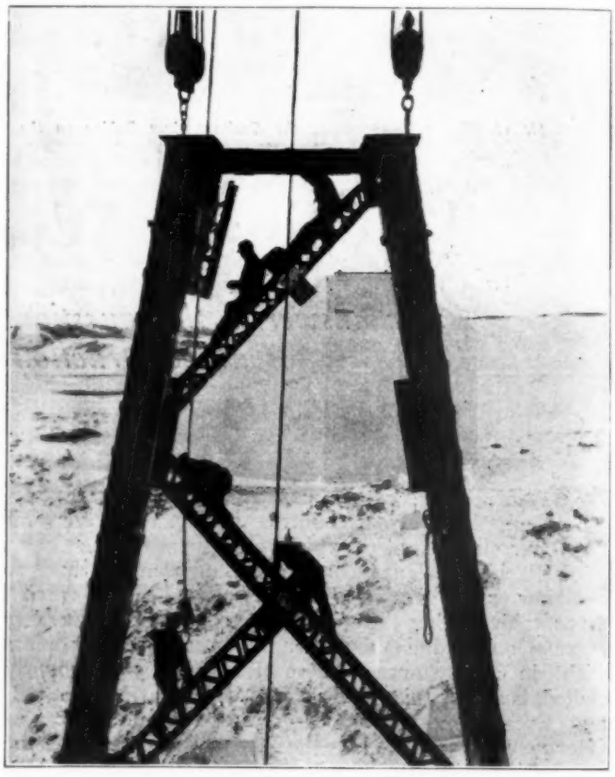
Such arguments result too often from accepting statements of the peak records of cold weather, blizzards and sleet, as the typical winter climate tributary to the district being investigated. In all of the northern states, the Canadian provinces and the interior of Alaska, even reaching close to the Arctic circle, spells of extremely severe weather are comparatively infrequent and are not usually of long duration, one to three days generally covering the peak period of the excessive cold spells, the degree of intensity of course varying with the location. Usually the weather is calm and in most places only moderately cold, the days are bright and clear and the effect of the dry snappy air is exhilarating and unconsciously urges one to activity to overcome the sting of the cold. As a result, during at least 75 per cent of the winter many of the men employed on winter jobs prefer assignment to outside work rather than in heated enclosures.

On the construction of the substructure for the Susitna River bridge on the Alaska Railroad, mentioned above, most of the laborers preferred loading and wheeling the barrows of aggregates outside, to rehandling concrete within a housed-in heated pier, in spite of the fact that during about six weeks the sun did not rise high enough above the mountains to shine into the valley.

The Difficulties Incidental to Construction in Summer

Below are given comparisons of summer and winter construction difficulties encountered on a large bridge in western Canada, that might be accepted as typical of the construction conditions actually encountered on bridges at many of the wide river crossings, in the sections discussed in this article. This example also indicates some of the problems to be expected when planning bridge construction at wide river crossings under similar climatic conditions.

(1) Floods, occurring at unexpected as well as at expected periods brought down uprooted trees and other floating debris, including logs that had broken away from up-river logging camps. The accumulation of these against the works carried away deflecting piers, portions of the caissons and the cross-river tramway and caused other damage. The delays throughout the summer season chargeable to such causes totaled about three weeks, including the time consumed in restoring the damage. The cost items incidental to the floods included the labor of shoving the debris off the deflecting piers and the upstream sides of the caissons and the cross-river tramway in attempting to save these structures, removing the plant on the banks above the level of the flood and otherwise attempting to prevent or minimize the extent of the damage. After the flood had subsided, came the work of restoration, consisting of removing piled logs and debris from whatever portions of the cofferdams, deflecting piers and tramways that had survived; pumping out the cofferdam, excavating the mud deposited therein and cleaning away the muck from the sides, and repairing the damaged caissons, tramway and deflection piers. Such mishaps were expensive. They compelled the prompt conversion of well-balanced productive forces into hastily-organized units to fight the destructive effect of the sudden floods.



Erecting a Viaduct Tower in Zero Weather

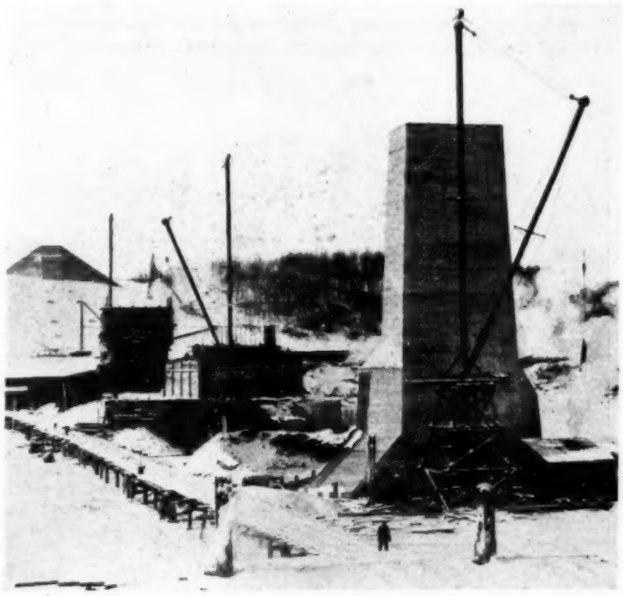
(2) Heavy spring and summer rains, while of short duration, hindered progress and at times compelled temporary suspension of work. The total delays from such amounted to three or four days during the mild season. Ordinary rains did not stop the work.

(3) The scarcity of labor, generally prevailing during the summer, gave rise to strikes and other labor troubles.

(4) Several short periods of extreme heat had a very noticeable effect on most of the men exposed to the sun. These included those employed in excavation, framing timbers, erecting forms and on practically all activities except concreting. Fortunately these heat waves were infrequent and usually lasted only from one to three days.

At other periods, mostly in the early fall, mosquitoes, sandflies and other biting pests harassed the men and horses so as to cause a perceptible decrease in efficiency and production. It was estimated that these retarding agencies, including the effect of heat, contributed to an average man power loss of about 10 per cent, affecting about two-thirds of the employees during the periods when these unpleasant conditions prevailed. This was equivalent to a non-productive period of four days for the full force at full pay during the mild season.

(5) Loss of time due to illness and accidents was greater during the summer season than in the winter



A Concrete Operation Equipped for Winter Work

although rigid enforcement of health regulations resulted in a low percentage of illness in all seasons.

(6) The cost of hauling and delivering materials averaged 30 to 50 per cent higher in summer (depending on the location) due to the soft condition of the new roads induced by rains.

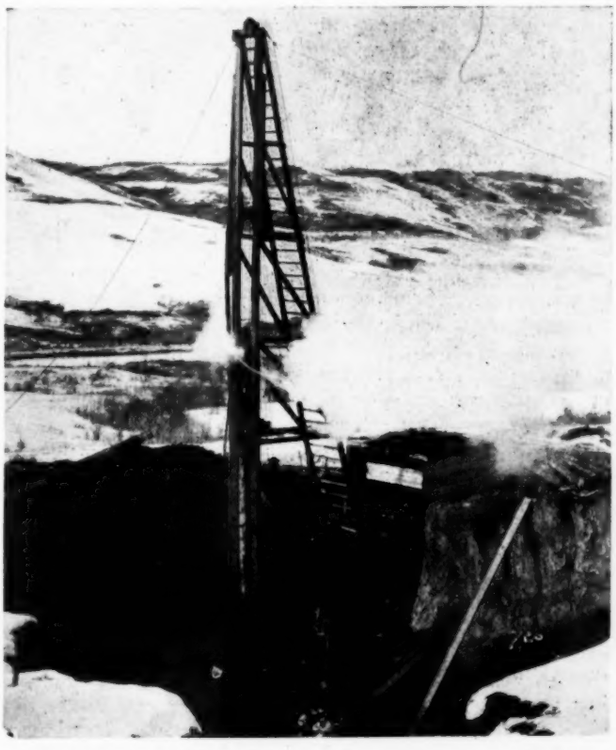
(7) Summer work at river piers required placing some of the equipment, such as pile drivers, and gravel and sand excavation on scows, the moving of which was slow and cumbersome due to the necessity of anchoring the scows to pile dolphins or to the sides of the cofferdams for each operation. Two scows suffered serious damage from snags with resulting trouble and loss of time in efforts made to save them. The pile driving and sheet piling done on cofferdams during the summer cost about three times more than that done in winter when the drivers would be moved over the ice. Excavation by derrick and skips cost 10 to 20 per cent more in summer because of greater delay and expense caused by leakage.

(8) Summer construction required higher cofferdams to provide an ample margin above expected ordinary floods. In rivers which carry logs and floating debris during floods, or cutting ice in the late fall, it was necessary to build diversion piers a short distance above the upstream end of the cofferdams that would deflect this debris away from the work. As noted elsewhere in this article even these precautions are not always efficient, particularly against floods of great magnitude.

Principal Difficulties Incident to Winter Construction

(1) Freezing weather makes it necessary to heat concrete aggregates and to provide housing and heating for such operations as mixing and placing concrete, laying brick and any other material in which the use of mortar is required. Shelters should generally be provided for men employed on activities requiring the use of tools, including machine tools, except on rough carpenter work such as framing timbers for trestles, caissons, forms and housing, steel erection, etc., where the men must of necessity work outside. Heating and housing concrete piers, including heating of aggregates increased the cost of concrete on large piers from 2 to 4 per cent, on abutments from 3 to 7 per cent, and on pedestals from 8 to 11 per cent, these figures being the respective averages of several large bridge substructures on railway construction in Canada.

(2) On quiet days with temperatures not lower than about 5 deg. below zero, the average output per man on outside work is not decreased but is practically at its highest, the same as in the cool days following the first frost of the late fall. The men are active and work steadily, and as the slight nip of the cold proves an incentive to exercise, they unconsciously accomplish more than the usual summer average. However, when the weather is so cold as to compel men to hamper their movements with heavy clothes, as happens when the temperature



Pile Driving Can Be Carried on Readily in the Cold Season

reaches about 20 deg. below zero and also when there is a wind at any temperature below freezing, there is a perceptible slackening in the work of the men in exposed places, although this does not affect men working under shelter.

(3) In some districts, notably in our northeastern states, and in portions of the Maritime and Quebec provinces in Canada, and along the Great Lakes, sleet is apt to create more trouble, delay and accidents to men and plant than any other winter inclemency. However, it can be removed from the plant, cables, etc., quickly with the careful use of steam jets if within reach of them. The slippery footing can also be counteracted by a generous

spreading of salt, sand or ashes. Fortunately such periods do not occur often and are generally of short duration.

(4) A plant that is unsheltered does not work as efficiently in winter but there is no noticeable difference when it is sheltered. The water pipes and exposed steam mains should, of course, be properly insulated. The protection and care of the plant in winter is a very important item. Intelligent anticipation will prevent troubles, delays, accidents and the incurring of expense due to oversight and negligence. Boilers and tanks not in actual service should be drained. Water pipes, even though insulated, should in the first instance be laid so that they can be easily drained and disconnected from the supply source. Steam equipment is preferable for winter work as it is much more dependable than gasoline equipment at temperatures below freezing, and the steam is also available for other purposes than running the plant.

(5) The use of explosives is required in excavating certain formations such as frozen gravel and sand, soil and clay, or materials otherwise loose or easily workable in summer. This condition, however, will ordinarily apply only at the beginning of the job. Once an excavation foundation in such materials is started and has reached below the frozen crust, it can easily be protected against further freezing by covering the top with tarpaulins spread over cross-timbers. Ordinarily, this will be sufficient for the average winter temperature but it can be supplemented by heating with stoves at night when the cold is severe. Explosives such as dynamite will require thawing, in which process care must be exercised as carelessness has resulted in some serious accidents.

(6) The removal of snow and ice will entail some expense but is usually not a costly item.

(7) Heating the premises, including the camps, will involve some expenditures which will vary according to local conditions and the cost of fuel.

When the cost of all construction items for the substructures of one of the large river crossings in western Canada were tabulated for winter and summer work of a comparable nature, it was found that the difficulties incidental to summer work, including losses caused by floods, had increased the cost of the concrete about 24 per cent, whereas the difficulties incidental to winter construction, including the heating of aggregates, housing and heating piers and allowances made for delays caused by storms, amounted to about five per cent, showing a saving of 19 per cent on the comparable items of that work in favor of winter construction.

Tabulating only the items of cofferdam and excavation on the same basis as explained above and dividing by the cubic yards excavated by derricks and skips applicable to each season the result was still more striking as it showed that excavation carried on during the mild season, including losses caused by floods, cost 84 per cent more than similar excavation done in winter. These illustrations of course apply only to certain river piers where a fair comparison could be made on work which in the north can be handled much cheaper in winter than in summer. However the construction costs of land piers, pedestals and abutments averaged about 5 to 6 per cent more in winter than in summer. Taking the bridge substurcture as a whole and separating all of the work done in winter and summer on land and in the river, the winter work cost an average of about 12 per cent less than the same items done in summer. The saving made on the shore work, aided by the good working conditions that prevailed throughout Indian summer after the first frost had killed the insects and the river had reached its lowest stage with no further danger from floods, enabled a substantial reduction to be made in the extra cost of summer work that had been incurred earlier in the season.

In spite of the handicaps that are supposed to hamper winter work it is undoubtedly true that ordinary labor is more efficient, more careful and more productive in winter than in summer, although generally working at reduced wages in winter. This applies also to mechanics, bricklayers and the higher priced trades which ordinarily will produce more per hour or day in the winter than when paid bonuses in the summer.

As a rule we are apt to magnify the difficulties of winter construction without considering its advantages and we are also inclined to overlook the disadvantages of summer construction. It is of course impossible to outline regulations that will apply to all winter work. Each job will require its own rules according to its peculiar conditions. Each job, whether performed in summer or in winter,

The 504-ft. Span of the Susitna River Bridge Was Erected in Extremely Cold Weather

has its own peculiar problems, its local advantages and special difficulties. To study the first, adapt the second and curb the last of these conditions, are the particular missions of those who plan and direct the work and whose solutions of the problems will have an important bearing on the financial outcome of the job.

Another direct economic incentive influencing winter construction will be the advantage to the railroad of having the structure or other improvement available for service at the earliest possible date. It will enable the contractor to release his plant for other work and incidentally add prestige and confidence in his ability to complete work regardless of weather conditions.

Another indirect but very important aspect is the fact that it is becoming more and more evident that the establishment of stable labor conditions—meaning the spreading of work throughout the year instead of bulking most of it into the summer—is necessary to the internal peace, greater contentment and conservative prosperity of the country. Only through more stable employment can this be reasonably assured and the responsibility to insure this betterment is not entirely a governmental duty. Large corporations, particularly those which serve the general public, should also consider the problem of employment from the public standpoint and frame a policy that will, within reasonable economic limits, distribute work throughout the year instead of concentrating it in seven or eight months. The cordial co-operation of contractors is needed so that the work may be planned and executed under a schedule that will include continuous operation with proper provisions to meet the anticipated requirements of winter construction. This is to the interest of all concerned.

Railroad the Logical Bus Operator, Says the Reading

Seeks bus permits in Pennsylvania on ground that railroad alone can give co-ordinated service

THE Reading defended its application for bus permits in Schuylkill county, Pennsylvania, in a hearing before the Public Service Commission of the state held in Harrisburg on December 2. The principal witness for the company was E. D. Osterhout, passenger traffic manager, and his testimony, with exhibits, forms what is probably one of the most thorough analyses of bus operation from a railroad standpoint which has ever become a matter of record in the United States.

The company has devoted months of study to the question of motor bus operation and a committee with A. C. Tosh, formerly inspector of transportation, as chairman has been assigned to this task. The members of this committee and other officers of the company—a score at least—were in attendance at the hearing, as were also about a hundred municipal officers, business men and prominent citizens of the various communities affected by the proposed plans—all of whom were prepared to testify in behalf of the railroad's application.

A bus-operating subsidiary, to be called the Reading Transportation Company, capitalized at $1,000,000, will be formed to operate the bus lines. Pending receipt of a charter by this subsidiary corporation, a number of officers of the railroad are making the application for bus permits in its behalf.

Mr. Osterhout's testimony follows in part:

Mr. Osterhout's Testimony

Exhibit No. 1* describes in detail the routes of the proposed bus lines. They are as follows: Route No. 1.—Pottsville to Tamaqua; Route No. 2—Pottsville to Mahanoy Plane; Route No. 2-A—Mahanoy Plane to Shamokin; Route No. 3—Pottsville to Lykens; Route No. 4—Shenandoah to Girardville and Shenandoah to Mahanoy City.

While the application covers a zone to be handled as a unit or division of our proposed more extensive system, it has been divided into numbered routes for reference purposes. Each route shows—first, the Reading Company Branch followed by the Reading Transportation Company route number and terminal points and then the exact route.

Age and Dependability of the Railroad

Exhibit No. 2 makes brief reference to the opening dates of the branches of railroad in this territory. It shows that as early as 1829, nearly a century ago, the lines forming the framework of the present Reading System started giving a general transportation service in Schuylkill and other counties. From this has grown a system whose 1,582 miles of railroad, operated by 32,000 employees, link together some 700 cities, towns and villages in Pennsylvania, New Jersey and Delaware, with an elaborate, closely related system of local and express trains averaging 23,000 miles per day.

Up to 25 or 30 years ago, the railroad was the sole means of ordinary transportation beyond the range and ability of the horse. Then came an era of electric lines, sometimes acting as feeders to the railroad, but frequently established as parallel competitors, naturally dividing the business which was often of limited volume. Nevertheless, our company continued its general service and transportation obligations.

Next came the improved highway and gasoline vehicle period. The private automobile, and later also the public motor bus nibbled away a little more of the railroad's passenger business. But, as with the electric lines, there were no cases in our area where these competitive agencies assumed the entire transportation obligations of a given community such as a branch or division of the railroad, usually selecting one class of the business in localities more favorable from their operating standpoint.

Exhibit 3 shows passenger traffic statistics for the past five years. The figures for the years 1921 to 1924 are actual, and those for 1925 are based on actual results for the first ten months, and closely estimated figures for November and December based on the results of the

Data from Exhibit No. 3

TOTAL PASSENGER REVENUE

	Reading	Change from previous year, %	Perkiomen	Change from previous year, %
1921	$10,233,085	.....	$114,818	.....
1922	9,950,155	—2.76	96,801	—15.69
1923	10,632,860	+6.86	85,740	—11.43
1924	10,187,574	—4.21	72,702	—15.21
1925	9,881,250	—3.01	70,455	—3.19

NUMBER OF PASSENGERS CARRIED

	Reading	Change from previous year, %	Perkiomen	Change from previous year, %
1921	25,678,351	.....	378,848	.....
1922	24,398,832	—4.98	337,972	—10.79
1923	25,991,337	+6.53	313,341	—7.29
1924	24,858,448	—4.38	281,524	—10.15
1925	24,518,700	—1.37	265,600	—6.00

AVERAGE FARE PER PASSENGER PER MILE

	Reading Cents	Change from previous year, %	Perkiomen Cents	Change from previous year, %
1921	2.499	.....	2.745	.....
1922	2.518	+0.76	2.621	—4.52
1923	2.475	—1.71	2.484	—5.23
1924	2.464	—0.45	2.402	—3.30
1925	2.445	—0.77	2.390	—0.50

AVERAGE NUMBER OF PASSENGERS IN EACH TRAIN

	Reading	Change from previous year, %	Perkiomen	Change from previous year, %
1921	70.27	.....	34.67	.....
1922	65.00	—5.14	30.60	—11.74
1923	68.50	+5.39	28.31	—7.48
1924	67.75	—3.61	25.00	—11.69
1925	67.57	—0.25	24.98	—0.08

AVERAGE DISTANCE PER PASSENGER

	Reading	Change from previous year, %	Perkiomen	Change from previous year, %
1921	15.95	.....	11.04	.....
1922	16.20	+1.57	10.93	—1.00
1923	16.53	+2.04	11.01	+0.73
1924	16.63	+0.61	10.75	—2.36
1925	16.49	—0.84	11.10	+3.15

* This exhibit and several others mentioned in the testimony are omitted since the testimony itself makes their nature clear to the reader.—EDITOR.

previous ten months. The period beginning with 1921 was adopted for the reason that immediately prior thereto, conditions were somewhat distorted due to a reflection of post-war conditions.

The figures for the Reading Company, because of its diversified passenger traffic, including main line and branch operations, and local and through service, do not adequately portray conditions in branch line territory such as is embraced in our application for substitution. Corresponding figures are not kept separately for each branch or division of the Reading Company, but we have a typical example of prevailing branch line traffic conditions, as the Perkiomen Railroad, 38 miles in length, serves as a single track branch of the Reading system. Because it is a Class I road under I. C. C. rules, the detail figures as to passenger traffic are accessible. This makes possible an ideal comparison between the results of the varied service of the Reading on the one hand, and the branch line service, typified by the Perkiomen, on the other.

Taking first the Reading Company, starting with 1921: The business dropped off in 1922 and went up in 1923, an unusually good year on all classes of our business. Since 1923 the traffic has decreased steadily; however, these figures do not represent the marked changes in the character of our traffic which are well known to us by observation and test. We are carrying fewer short distance riders and more of those making long trips, the latter exceeding the former sufficiently to show an increase in the average distance per passenger.

Low-Rate Traffic Increasing

In connection with the decreased short trips and increased long ones, there is a change in the character of fares paid, that is, the lower fare commuter and excursionist is increasing as against the volume of normal fare traffic, resulting in a diminishing average fare per passenger per mile.

These figures do not represent another condition very apparent to us, that the main line trains are increasing their patronage and the branch line business is dropping, the net result being a decreasing average number per train taking all trains into account.

Ignoring the various actual conditions which are not disclosed by the regularly kept average figures of the Reading, and accepting it as the result of operation of combination service, there is a very apparent difference in the results of the Perkiomen, a branch line operation. The patronage is decreasing at a rapid rate nothwithstanding the fact that it serves a territory which for the past several years has undergone much development. There is, of course, no consistent long distance patronage to outweigh the loss in local traffic, and furthermore, the high fare passenger discontinued patronage to a greater extent than did the low fare, resulting in a marked decrease in the average fare per passenger per mile. There have been only slight variations in the average distance per passenger because the traffic was almost entirely of a local short distance nature. The marked reduction in traffic on the Perkiomen is fairly representative of conditions obtaining generally on our branch lines; in fact, the downward trend is more pronounced in Schuylkill county, as the average number of passengers on trains to be eliminated is 18 as compared with 25 on the Perkiomen.

This situation became a matter of much concern to our management, for it was apparent that our present steam train operation was becoming more unsound as an economic proposition, and various possible solutions were studied and analyzed, including the following:

Proposed Solutions

Consideration was given to increasing the revenue, either by advancing the fares so that the return would at least approach the cost of operation or by reducing the fares to attract an increased patronage. Both of these plans were discarded and it was felt that the solution of the problem did not lie in a general fare adjustment at this time. Our scale of fares of various kinds had several factors entering into their original construction, including distance and volume. The daily rider or commuter received a very much lower fare than the one traveling only occasionally. The balance in volume between the two groups has been greatly changed in recent years, particularly in local service, in that we now have a greater volume of low fare passengers and a diminishing number of normal fare passengers. Our regular one way fares are uniform with those of other roads in the country and our commutation fares have remained unchanged since an extensive hearing before this Commission in 1915, except for the general percentage increases made from time to time; so that there

Portion of Exhibit No. 4

ROUTE NO. 1. POTTSVILLE–TAMAQUA

Northbound—Weekdays

	T.11	M.C.	*T.553*	T.19	M.C.	M.C.	*T.555*	M.C.	*T.557*
	A.M.	A.M.	*A.M.*	A.M.	A.M.	P.M.	*P.M.*	P.M.	*P.M.*
Pottsville	2.21	7.10	*7.25*	9.25	10.00	12.35	*12.45*	3.50	*4.02*
Tamaqua	2.56	8.00	*8.05*	10.10	10.50	1.25	*1.25*	4.40	*4.45*
	T11	**T1**		**T19**	**T3**	**T5**		**T7**	
Tamaqua	**3.01**	**8.50**	....	**10.25**	**11.18**	**1.43**	....	**4.48**	....
Shamokin	**4.45**	**10.36**	....	**12.47**	**12.43**	**3.33**	....	**6.31**	....
Williamsport	**6.45**	**12.40**	....	**3.30**	**2.30**	**5.43**	....	....	....

Northbound—Sundays

	T.11	T.2553	M.C.	M.C.	M.C.	M.C.
	A.M.	A.M.	A.M.	A.M.	P.M.	P.M.
Pottsville	2.21	7.05	8.00	10.00	12.35	3.50
Tamaqua	2.56	7.45	8.50	10.50	1.25	4.40
	T11	**T2553**		**T3**		**T7**
Tamaqua	**3.01**	**7.52**	....	**11.18**	....	**4.48**
Shamokin	**4.45**	**9.45**	....	**12.43**	....	**6.31**
Williamsport	**6.45**	**11.54**	....	**2.30**	....	....

Southbound—Weekdays

	T14		T4	T6		T8			
	PM		AM	AM		AM			
Williamsport	**11.20**	....	....	**7.35**	....	**10.20**	....	....	....
Shamokin	**1.19**	....	**6.30**	**9.32**	....	**12.06**	....	....	....
Tamaqua	**3.01**	....	**8.07**	**11.03**	....	**1.43**	....	....	....
	T.14	*T.552*	M.C.	M.C.	*T.556*	M.C.	T.20	*T.562*	M.C.
	A.M.	*A.M.*	A.M.	A.M.	*P.M.*	P.M.	P.M.	*P.M.*	P.M.
Tamaqua	3.06	*8.50*	8.50	11.30	*1.50*	1.50	2.23	*5.15*	5.15
Pottsville	3.40	*9.29*	9.40	12.20	*2.30*	2.40	3.03	*5.55*	6.05

Southbound—Sundays

	T14	T4		T8		
	PM	AM		AM		
Williamsport	**11.20**	....	....	**10.20**	....	....
Shamokin	**1.19**	**6.30**	....	**12.06**	....	....
Tamaqua	**3.01**	**8.07**	....	**1.43**	....	....
	T.14	M.C.	M.C.	M.C.	*T.2562*	M.C.
	A.M.	A.M.	A.M.	P.M.	*P.M.*	P.M.
Tamaqua	3.06	9.00	11.30	1.50	*6.28*	6.30
Pottsville	3.40	9.50	12.20	2.40	*7.12*	7.20

Note:
T.—Passenger trains.
M.C.—Motor coach.
Italics—Eliminated local trains.
Light Face Type—Substituted local service. Combination of motor coaches and remaining train service.
Bold Face Type—Co-ordinated local and through service. Extensions of local service by connections between branch service and through trains at stations used jointly in either train or motorcoach service.

is still about the same relationship between normal and commutation fares. While the number of low fare commuters in the ordinary sense of the word, as compared with full fare passengers, may not be as great in Schuylkill county as in certain other sections, we do a very large low-fare business throughout this region in the transportation of miners. Under normal conditions, we handle approximately 9,000 passengers per day in this class of service, most of whom travel between points in Schuylkill county, and for distances less than ten miles. The average fare is little over five cents apiece.

More Excursions

More efficient use of equipment and facilities was discussed. One result of this was an intensified program of Sunday and holiday excursions. We have a large pool of coaches necessary for weekdays, but not needed in regular service Sundays and holidays, when commuters, shoppers, etc. rarely travel. Every opportunity to encourage train-load excursion traffic is followed up, and while this class of business is feeling the effects of the automobile and the motor coach group party business, it is still an important revenue feature.

Thought was given to further improvements in equipment but it was felt that we would not be justified in extending our average program to increase revenue.

The matter of increasing the frequency of our local steam train service was carefully analyzed, and the inevitable conclusion was reached, based on discouraging test operations, that insufficient new traffic could be attracted back from the automobile to warrant the greatly increased expense of additional steam train operation.

The question of general reduction of local passenger service was then considered, but it was felt that this should be the last resort and postponed until all other means of solution had been tried.

The "Great Transition Period"

Our management then came to the conclusion that this question, which is a part of what has been aptly termed "the great transition period of American transportation," presents its own solution—not the abandonment of service nor the gradual transfer of the remaining traffic from the railroads to numerous small motor bus concerns having no other interest in transportation but rather, the public interests would best be served by the natural economic method of continuing long established service by the substitution of motor coaches for lightly patronized local trains and the co-ordination of the combined services under the management of the railroad and its trained organization, which must continue to be the country's chief reliance for travel and shipping in any event.

In arriving at the conclusion to meet the situation by establishing substituted service made up of part train and part motor coaches and harmonizing in every possible way with our other operations, we recognized the following features.

Advantages to Public of Railroad Bus Operation

The public endorsement of and demand for the motor coach will be made without duplicate overhead expense, as the general supervision can be absorbed by the parent organization. It insures an arrangement backed up by the railroad's traditional policy of maintaining steady, reliable, "all-weather" service. The operation will be in the hands of a management trained to its responsibilities and long experienced in complying with public regulations, which have the possibility of early expansion by legislative enactment in view of the general and rapid motor coach development.

The plan will fortify the community against wasteful competition for a limited amount of traffic; a costly condition to the patrons in the long run for it is apparent from our own recent experiences that present local train service, especially on a single track branch, cannot successfully make progress against a competing motor bus operation on a two-way modern road. The practical side of it is that a new group of riders is not suddenly produced for each new public transportation development. The process of obtaining new local passengers is slow, therefore the parallel motor coach competitor lives to a large extent by taking a portion of the existing steam train patronage. The substituted and supplementary service we propose overcomes the ordeal and expense of the period of gradual gain by the one, and the slow but sure loss by the other.

Under Railroad Operation Bus Becomes Part of Through Service

It continues and improves a long established service directly connecting the branch line localities with the outside world, for this local branch line service is a unit in through travel to and from regions beyond the immediate territory. The plan continues the advertising value of representation in timetables obtainable at distant points so that the visitor will have advance knowledge of exact times through to destination. It will perpetuate our system's participation in the growth and development of the region, by maintaining its contacts and continuing to furnish the unified character of general service, including freight and passenger operations, heretofore enjoyed—a matter of concern to existing and new industries.

Extensive Survey Made

Upon determination of this policy of substitution, an extensive survey was undertaken. As to the highways—the kind and condition of road surface was examined and the matter of grades, curves, bridges, etc., was reviewed. The larger task, however, was the revision of train service. An exhaustive study was made of operating schedules and requirements also passenger and miscellaneous baggage car traffic, including express and mail so as to develop a plan of substitution, adequately providing for the needs of the community in respect to all of these classes of traffic.

Schuylkill County Lines Only First Step

Schuylkill county was selected as the ground for the first step in the enterprise, because for generations our railroad has been closely associated with the history, growth and development of this busy area and because it presented nearly an ideal opportunity for substitution of motor coaches for branch trains, on account of uniformly good highways closely paralleling our road between all important places long served by our trains. Pottsville is the terminus of what we designate as our main line.

Exhibit No. 4 is a statement of proposed co-ordinated service set up in public timetable form; figures in italics representing eliminated local trains, those in ordinary type representing substituted local service consisting of combination of motor coaches and remaining trains, and the figures in heavy type representing connecting service, that is, shows the co-ordination principle of branch line service connecting with through trains at stations used jointly by either train or motor coach service.

The motor coach terminal and intermediate times have been based on careful calculations as to speed and road conditions, also anticipated travel. If after further test runs or under actual operating experience and various weather conditions, modifications prove desirable, either

from the standpoint of better or more reliable performance or the requirements of the traffic, such changes as seem proper will be made. However, this exhibit represents the basic schedule we propose to put into force.

Portion of Exhibit No. 6

TIME-TABLE OF PROPOSED CO-ORDINATED SERVICE TO AND FROM POTTSVILLE

Weekdays		
Arrive from	A.M.	Leave for
Philadelphia, Reading	2.14	
	2.21	Tamaqua, Shamokin, Williamsport
Williamsport, Shamokin, Tamaqua	3.40	
	3.45	Reading, Philadelphia, New York
	5.35	Reading, Philadelphia, New York
	6.40	*Frackville, Mahanoy Plane, Shamokin,* Mahanoy City
	6.55	Reading, Philadelphia, New York
	7.10	*Tamaqua,* Shamokin, Williamsport, Mauch Chunk, New York
	P.M.	
Tamaqua	*6.05*	
Mahanoy City *Mahonoy Plane, Frackville*	*6.20*	
Lykens, Tremont	*6.45*	
New York, Philadelphia, Reading	6.50	
	7.00	*Frackville, Mahanoy Plane,* Shamokin, Williamsport
	7.00	*Tremont, Lykens*
Philadelphia, Reading	7.14	
Williamsport, Shamokin, *Mahanoy Plane, Frackville*	*7.25*	
Pine Grove, Tremont	*7.25*	
	7.30	Reading, Philadelphia
Mahanoy City, *Mahanoy Plane, Frackville*	*8.40*	
New York, Philadelphia, Reading	9.47	
	10.15	Reading, Philadelphia, New York (Through Sleeper)

Note—
Ordinary type—Trains.
Italics—Motor coaches of Reading Transportation Company.

Exhibit No. 6 shows the proposed co-ordinated service to and from Pottsville set up in station timetable form. On the left side are the points from which trains and motor coaches arrive, and on the right side are the points for which trains and motor coaches leave from Pottsville. The corresponding arrival and departure times are shown in the center column. The regular type represents trains and the italics motor coaches, and where motor coaches make direct connections with trains, the more important destinations reached by the train are shown in ordinary type; for example—a motor coach leaving Pottsville 7.00 P. M. for Frackville and Mahanoy Plane makes direct connection with trains for Shamokin, Williamsport and intermediate points.

Portion of Exhibit No. 7

STATEMENT OF COMPARATIVE FARES

PRESENT RAIL AND PROPOSED MOTOR COACH LINES. ROUTE NO. 2, POTTSVILLE–MAHANOY PLANE

	Pottsville		Port Carbon		St. Clair	
Railroad station	T.	M.C.	T.	M.C.	T.	M.C.
Pottsville	..	..	..	..	..	..
Port Carbon	.11	.11	..	..	..	..
St. Clair	.18	.18	.10	.10	..	..
Broad Mountain	.22	.22	.12	.12	.10	.10
Frackville	.30	.30	.29	.29	.21	.21
Mahanoy Plane	.52	.40	.50	.39	.42	.31

Note—Motor coach fares between Pottsville and St. Clair and stations beyond, apply direct or via Port Carbon.
T.—Train fares.
M.C.—Motor coach fares.

Fares Proposed

Exhibit No. 7 is a statement of proposed motor coach fares compared with similar railroad fares. Except where there is a substantial difference in the mileage between the railroad and the highway, the present normal railroad fares have been adopted for the motor coach runs between common points. In no case is it purposed to charge a higher fare via motor coach than now in effect via train, but rather, in some instances where the highway route is much shorter than the railroad line, an appropriate lowering of the motor coach fare has been provided for.

Railroad arrangements applying to children's fares will be adopted for the motor coach runs. Children under five years of age when accompanied by parent or guardian, will be transported free of charge. Children five years of age and under twelve years of age to be charged one half fare. Similarly, railroad clergy tickets issued at half fare will be honored on the motor coaches between common points.

The general railroad regulations as to transportation of baggage will be applied to motor coach operation with appropriate limitations as to size and weight consistent with the capacity of the vehicle.

Bus or Rail Travel Optional

Exhibit No. 8 is a statement of proposed interchangeable acceptance of railroad tickets on motor coaches. Railroad tickets, including commutation tickets, will be accepted on the motor coaches.

Exhibit No. 9 is a statement of proposed optional routes.

There were several protestants present at the hearing—mostly representing interurban trolley lines and independent bus operators. They pled their inability adequately to cross question Mr. Osterhout without further preparation and accordingly requested that the hearing be continued at some later date—possibly later in December or in the early part of January. No objection was offered and so the hearing recessed.

Hearing on New York Central Train Control

WASHINGTON, D. C.

HEARING on the complaint of the Sprague Safety Control & Signal Company against the New York Central and the General Railway Signal Company charging violations of the law in connection with the installation of automatic train control on the New York Central Lines, was begun before Division 1 of the Interstate Commerce Commission, Commisioners Esch, McChord and McManamy on December 2. C. C. Paulding, assistant vice-president of the New York Central, at once called attention to his pending motion to dismiss that part of the complaint charging violation of section 1 of the interstate commerce act and offered a further motion to dismiss the complaint as to section 26 of the act and section 10 of the Clayton act, on the ground that the facts as stated in the complaint and a bill of particulars do not constitute violations. He asked whether the commission desired argument on the motions but Commissioner McChord ruled that arguments were not necessary and that the motions could be held in abeyance until the close of the hearing. Mr. Paulding said that the essence of the allegations as to violations of specific sections of the law involved charges of criminality and had no place in a train control proceeding but that the charges that the device installed is unsafe and not in compliance with the commission's specifications for train control installations require the road to defend its position and it is ready to meet them. He then introduced as witness H. S. Balliet, signal engineer of the New York Central, but first asked to be furnished with a copy of any record regarding conferences or correspondence between the complainant and any of the com-

missioners prior to the filing of the complaint and Commissioner McChord said that the documents would be furnished.

Mr. Balliet described the auto-manual inductive train control device of the General Railway Signal Company, for which the New York Central Lines have contracted for installation on nine divisions, and went over the specifications prescribed by the commission item by item, saying that the device is in full compliance with each except as to speed control and except as to two items in the specifications which he said could not both be complied with at the same time. He said he had made a personal investigation of the system as in operation on the Lehigh Valley and that the same system was installed on the Atlantic Coast Line and the Southern. Mr. Paulding then introduced copies of letters addressed by E. H. De Groot, Jr., director of the Bureau of Signals and Train Control Devices, to officers of the Lehigh Valley, Atlantic Coast Line and Southern regarding the preliminary inspections by the commission's engineers. When Edwin L. Garvin, counsel for the Sprague company, raised some question as to the competency of the letters as evidence Commissioner McChord held that they might be received but said that a ruling had been made that such letters were not communications of the commission itself.

Mr. Paulding then introduced a copy of the contract between the New York Central Lines and the General Railway Signal Company, dated August 5, 1925, in which the signal company agreed that the device should comply with the commission's specifications. Counsel for the Sprague company said he would not concede that that date is correct as the date of the execution of the contract. Mr. Balliet said the contract covers nine divisions on five roads of the New York Central system and contract is about to be made for another division. In connection with his description he said a locomotive equipped with the device had been taken through the electric zone without interference but that inductors have not been installed in that zone. He described the progress being made with the installation and said that the programs of the five roads call for completion by July 18, 1926.

Mr. Balliet was subjected to a detailed cross-examination regarding the operation of the device and particularly the forestalling feature by Ellwood Colahan of counsel for the Sprague company, who asked if the fact that an engineman is able to move a lever handle is proof that he is alert and efficient. Mr. Balliet said that in the circumstances it is, because he has to pull the lever and release it at just the right time as he is passing over the track element. Mr. Colahan also read from a committee report which Mr. Balliet had signed sometime ago in which objection was made to the Sprague device on the ground that it was not of the continuous type, whereas Mr. Balliet had testified that he now preferred the intermittent type. Mr. Colahan asked if a short circuit in the wires leading to the inert track element might not cause a false clear indication. Mr. Balliet said it might but that such a condition would be detected by ordinary daily inspection and moreover that there would be another opportunity for a stop. Mr. Colahan also called attention to a requirement in the specifications issued by the New York Central over two years ago of a 4-inch clearance above the track element, whereas Mr. Balliet had testified that he now considered 1½ inches clearance sufficient. Mr. Balliet said that an accumulation of ice would not affect the operation.

B. J. Schwendt, assistant signal engineer of the Ohio Central lines of the New York Central system, then took the stand and denied specifically various statements in the bill of particulars filed by the complainant as to the points on which the device was declared unsafe. Regarding statements that the forestalling feature permits an engineman to run by signals at any speed and under any density of traffic or when unable to see signals, Mr. Schwendt said the man must be sufficiently alert to operate the forestalling lever correctly and at the right place or he would be stopped; that he is required to acknowledge signal indications other than clear indications; that if he disregards a caution signal and takes no action he would be stopped, and in case of poor visibility so he could not see the signal he would lose his opportunity to forestall. Mr. Colahan cross-examined the witness as to his experience as an electrical engineer and when he declined to characterize himself as an "expert on train control" moved that his testimony be stricken from the record, but Commissioner McChord said: "We get a good deal of information here from people who do not claim to be experts."

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended November 21 amounted to 1,057,674 cars, an increase of 46,755 cars as compared with the corresponding week of last year and an increase of 67,375 cars as compared with 1923. For the week ended November 14 the total loading was 1,050,758 cars. For the week ended November 21 the loading exceeded that of the corresponding week of the previous year in all districts except the Southern and in coke, ore, merchandise and miscellaneous freight, but decreases were reported in the loading of grain and grain products, livestock, coal and forest products. Miscellaneous loading showed an increase of 35,405 cars. The summaries as compiled by the Car Service Division of the American Railway Association, for the week ended November 21 and also for the week ended November 14, which was not published in last week's issue, are as follows:

REVENUE FREIGHT CAR LOADING

Week ended November 21, 1925

Districts	1925	1924	1923
Eastern	236,132	230,952	240,644
Allegheny	211,061	195,211	200,639
Pocahontas	58,570	50,430	36,749
Southern	156,703	157,117	146,199
Northwestern	140,202	132,598	131,248
Central Western	174,303	165,534	159,257
Southwestern	80,703	79,077	75,563
Total Western	395,208	377,209	366,068
Commodities			
Grain and grain products	53,121	59,695	52,082
Live stock	35,735	44,047	39,435
Coal	189,182	196,346	182,252
Coke	15,233	10,170	11,721
Forest products	67,897	72,030	74,174
Ore	32,089	15,345	24,869
Mdse., l. c. l.	268,410	252,684	250,696
Miscellaneous	396,007	360,602	355,070
Total	1,057,674	1,010,919	990,299

Week ended November 14, 1925

Districts	1925	1924	1923
Eastern	234,848	236,371	234,873
Allegheny	203,845	197,420	196,050
Pocahontas	59,621	52,673	39,031
Southern	153,657	156,901	148,197
Northwestern	154,420	133,253	148,197
Central Western	170,317	163,364	158,723
Southwestern	74,050	76,861	72,455
Total Western	398,787	373,478	379,375
Commodities			
Grain and grain products	46,704	55,314	48,015
Live stock	36,847	45,363	40,681
Coal	186,416	189,728	170,998
Coke	15,736	10,039	10,751
Forest products	67,183	69,631	72,749
Ore	41,627	20,836	45,049
Mdse, l. c. l.	267,454	253,791	247,816
Miscellaneous	388,791	372,141	355,991
Total	1,050,758	1,016,843	1,002,050
November 7	1,063,322	995,279	1,036,221
October 31	1,091,273	1,073,374	1,035,849
October 24	1,121,459	1,113,053	1,073,841
October 17	1,106,114	1,102,300	1,073,095
Cumulative total, 47 weeks	46,556,087	44,180,415	45,670,308

The freight car surplus for the week ended November 7 averaged 103,969 cars, including 37,726 coal cars and 47,239 box cars. The Canadian roads for the same week had a surplus of 12,463 cars, including 10,000 box cars. For the week ended November 14 the surplus for the roads in the United States was 112,572 cars, including 37,041 coal cars and 51,940 box cars, while the Canadian roads had a surplus of 7,578 cars, including 5,000 box cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended November 21 established a new high record of 78,625 cars. In the western division grain loading was the heaviest of any week this year. Compared with the same week last year total loadings were heavier by 10,483 cars, the largest increases being in grain, merchandise and miscellaneous freight.

Commodities	Total for Canada Nov. 21 1925	Nov. 14 1925	Nov. 22 1924	Cumulative Totals To Date 1925	1924
Grain and Grain Products..	23,582	21,626	17,801	417,185	435,260
Live Stock	3,151	3,191	3,206	114,538	111,707
Coal	9,335	8,261	8,430	206,829	257,012
Coke	511	457	306	14,033	10,968
Lumber	3,358	3,230	3,538	166,670	168,997
Pulpwood	1,393	1,364	1,017	118,113	116,448
Pulp and Paper	2,326	2,351	2,110	95,953	92,302
Other Forest Products	2,800	2,660	2,161	132,083	119,829
Ore	1,608	1,620	1,406	67,105	59,456
Merchandise L. C. L.	16,283	14,321	15,676	718,389	686,738
Miscellaneous	14,278	14,665	12,491	609,312	576,366
Total Cars Loaded	78,625	73,746	68,142	2,660,210	2,635,083
Total Cars Rec'd from Connections	35,168	33,953	31,122	1,560,455	1,479,097

Highway Crossing Signals in Delaware

THE photographic illustration, in which is shown a "cross-buck" crossing signal in the center of the road, illustrates a warning which has recently been set up by the State Highway Department of Delaware, at Wyoming in that state, a station on the Delaware di-

Crossing Signal at Wyoming, Del.

vision of the Pennsylvania Railroad, 51 miles south of Wilmington. The reader will recall that a crossing signal of this general type as installed by the state of Delaware at Cool Spring, was described in the *Railway Age* of September 27, 1924. In that description there was shown a sketch of the fence-like structure used as a barrier, as it appeared before it was painted. The striking appearance of the barrier, both in that example and in the one here shown, is produced largely by the heavy black striping.

A similar warning device, somewhat different in detail, is being put up at Kenton, Del., on the Oxford branch, five miles from Clayton. The line-drawing shows the widths of different sections of the highway as constructed at Kenton.

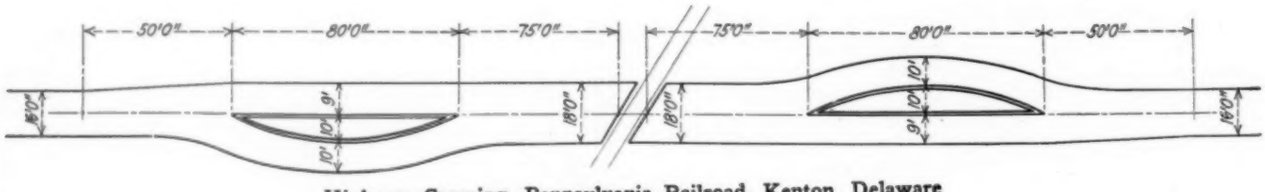
Crossing Signals at Millsboro, Del.

An officer of the Pennsylvania advises that the experience of the public with the signal at Cool Spring has resulted in favorable comments more numerous than those which are unfavorable. Officers of the railroad report no difficulties.

At Millsboro, Del., automatic flashing light signals have been erected by the railroad company at a crossing where there is a highway crossing the railroad and another parallel to it. These signals are shown in the right-hand illustration. In this installation electric lights at the top of the mast keep the oval sign constantly illuminated. The two red lights flash, automatically, on the approach of a train, at the rate of 35 times a minute. By agreement between the railroad company and the borough authorities, this installation, put up at the expense of the railroad company, takes the place of the crossing watchman.

In this signal the two pairs of flashing lights which project their rays in a line parallel to the railroad are for the benefit of wayfarers approaching the crossing in the highways parallel to the tracks, on both sides, which lead off to the right of the picture. There is no highway leading to the left.

A HEARING before the Interstate Commerce Commission on the petition of northern and southwestern trunk lines for a redistribution of the freight rates on through shipments over southern trunk lines, will be held in Galveston, Tex., beginning February 1. The petition claims that northern and southwestern trunk lines are not receiving an adequate division of the rates for their portion of the handling of shipments bound to southern points.



Highway Crossing, Pennsylvania Railroad, Kenton, Delaware

A Study of Locomotive Whistles

More effective warnings can be obtained when the whistle is located in front of the stack

By Arthur L. Foley
Head of Department of Physics, Indiana University, Bloomington, Ind.

NO doubt the crossing menace would be lessened somewhat, but it would not be removed, if by legislation or otherwise the public could be induced to stop, look and listen. Most crossing accidents involve motor cars. If the driver stops and sits in his car, his seeing may be prevented by buildings, corn fields,

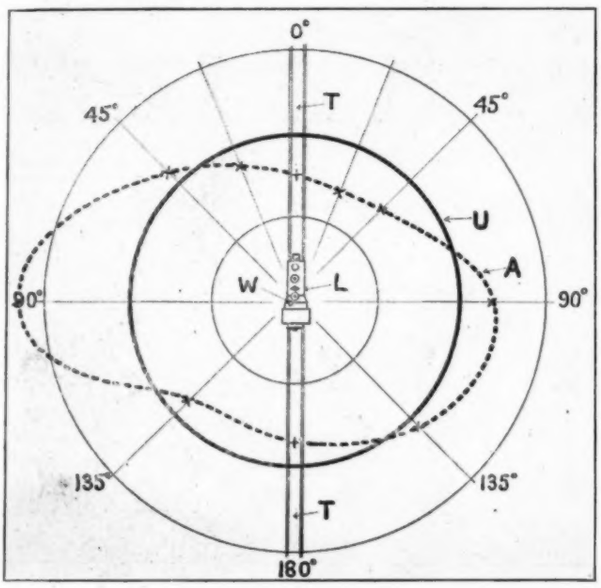


Fig. 1—Sound Intensity, Curve A, About a Locomotive Whistle Mounted Near the Steam Dome

or other obstructions, and his hearing by motor noises, particularly in the case of the closed car. If the driver gets out of his car and walks to the center of the track and looks, he may even then, due to track curvature or adverse weather conditions, not be able to see an approaching locomotive as far away as would be necessary for safety. He may see the locomotive at a considerable distance and be deceived in thinking that he has plenty of time to cross the track before the train can reach the crossing. It should be remembered that a train running 60 miles per hour travels a third of a mile in 20 seconds, the average time required for a driver to return to his car, take his seat and drive the car to the track.

These facts, together with the obvious fact that nothing short of an army of police could bring about a general observance of the "stop" part of the warning, emphasizes the importance of the "listen" part of it. It is more important than the "look," for the driver of a car who does not keep his eyes rather closely focused on the road he is driving over is more dangerous to traffic than is the locomotive, whose path is fixed. But the driver may listen all the while, and may hear a locomotive which it would be impossible for him to see. It is timely, therefore, to consider the efficiency of locomotive whistles as danger signals, particularly since closed cars are coming into such general use. Such cars shut out a considerable fraction of the whistle sound and shut in much of the hum of the car's motor and other mechanism. The locomotive whistle in common use signally fails to meet these requirements. It is rather strange that it has survived so long in this age of striving after efficiency.

Actual Distribution of Sound About a Locomotive Whistle—Ear Estimates

The writer's first experiments on this question consisted in determining how far a certain locomotive whistle could be heard in various directions from the locomotive, when the listeners were in a closed automobile standing still with engine running, and again with the engine stopped; also when in a touring car under the same conditions. Ear estimates of the whistle intensity were made by each of five listeners when the automobile was stationed 1,200 ft. from the locomotive, in various directions, with the engine running and when the engine was stopped, on clear days and foggy days, and on days with

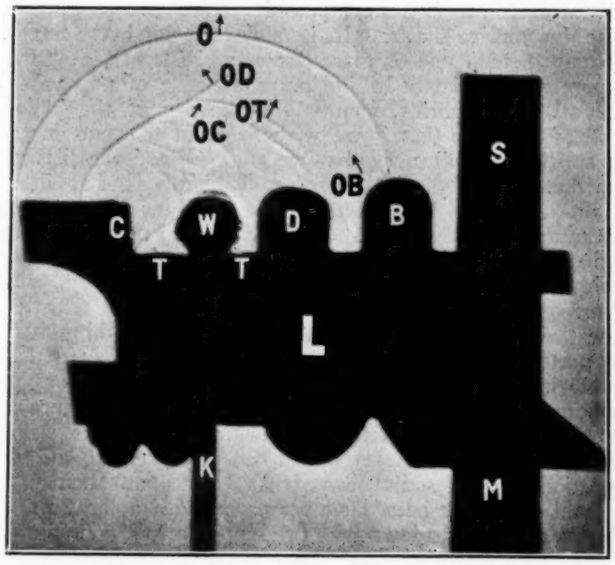


Fig. 2—Absorption of Sound Energy by the Hot Gases From the Smoke Stack of a Miniature Locomotive

various wind velocities. Finally, ear estimates were made of the relative intensities of the sound of the whistle at various distances ranging from 1,200 ft. to four miles, when the listeners were standing on the ground near an automobile with the engine running, and 20 ft. from the car with the engine running and when stopped. It is the ear effect that the locomotive engineman must depend upon to save the lives of those crossing the railroad tracks, and the railroad company from damage suits. If the results of the ear estimates differed essentially from those made mechanically, I should discard the latter and base my conclusions on the former.

In Fig. 1 is shown the respective radii of the 10 points

(crosses) on the broken curve *A*, which indicate the relative sound intensities in the 10 indicated directions from a chime whistle *W* on a locomotive *L* standing on on a turntable on the track *T-T*. The intensities shown in Fig. 1 were measured in the 10 directions shown, at a uniform distance of 1,200 ft. from the whistle. Instead of moving the observing station, the locomotive was placed on a turntable and the observing station located permanently at the side of the track 1,200 ft. from the turntable. The locomotive was then successively turned so that the relative direction of each of the 10 observing stations was that indicated by the respective numbered radii in Fig 1.

The continuous curve *U* shows what the sound intensities in the several directions would have been if the sound of the whistle had been radiated uniformly in all directions. Note that the sound of the whistle, curve *A*, was actually more intense behind the locomotive than in front of it, and two or three times as intense at right angles to the track as along the track. In other words, most of the sound energy was dissipated at right angles to the track. Why this objectionable distribution?

The general contour of curve *A* is about what one should expect from a whistle located as this one was, to the side and rear of and only a few inches from, a steam dome several times as large as the whistle itself. Sound reflection from the steam dome and other parts of the locomotive and sound absorption by the hot gases issuing from the smoke stack and rising from the boiler explain the matter.

Sound Reflection

From the standpoint of sound reflection, refraction and absorption, the location of a locomotive whistle is usually about as bad as if it were placed inside the cab or under the locomotive itself. It is always behind the stack, usually behind one or more domes and the bell, and frequently immediately behind or at the side of pop valves or other accessories mounted on the top of the boiler. All of us know that if we wish to shout to some one at a considerable distance that we turn toward the listener so that the sound will be projected initially in that direction. All of us know that we can be heard at a greater distance if we do not stand behind a lamp post or a tree when we shout. Nevertheless, we continue to locate whistles from the standpoint of convenience only, with no thought of a possible connection between the whistle's location and its efficiency in doing the only thing it is expected to do; namely, to make as much noise as possible in front of the locomotive and as little as possible where it is not only not needed, but is usually a nuisance.

When the whistle is placed behind the smoke stack, dome, etc., all of these objects reflect the energy of the portion of the sound wave that falls upon them. A sound wave has been long compared with a light wave, but the sound shadows thus produced are not comparable in density or definiteness to the light shadows that would result were the whistle replaced by the headlight. Nevertheless, there are sound shadows of more or less intensity, depending on the size of the object casting them and on its distance from the sound source; in other words, depending on the solid angle of the object as seen from the sound source. Where the distance is small and the angle large, as when a whistle is mounted very near a dome or pop valve, immediately behind or at one side as in some recent practice, the intensity of the sound ahead of the locomotive is decreased and increased at the side or rear over what it would be were the whistle mounted in front of the smoke stack. This is clearly shown in curve *A* of Fig. 1 and in Figs. 2 and 3.

If the reader's imagination is sufficiently strong, perhaps he may think of *L* in Figs. 2 and 3 as a crude miniature locomotive with exaggerated dimensions of some of the parts. The smoke stack *S* was the upper end of a metal tube *M* about two feet long, which served also to support the model. *C* is the cab, *D* the steam dome, *B* the sand box and *T-T* the top of the boiler. The whistle *W* consisted of a spark gap behind a disc of insulating fibre, the gap being about ¾-in. long and connected through conductors *K* to an electric influence machine. The crack of the electric spark produced the sound waves shown in the figures. These waves were photographed by a method described by the author in the November, 1912, Physical Review and also in the Scientific American, supplement of February 15, 1913.

In Fig. 2, *O* is the original sound wave produced by the spark at *W*. If the wave had encountered no obstructions, it would have traveled outward from *W* uniformly in all directions. We note, however, that there have been many reflections. *O B*, is the reflection of *O* from *B* "caught in the very act." *O T* is the reflection of *O* from the top of the boiler *T*, *O D* from the steam dome *D* and *O C* from the cab *C*. In Fig. 3, the original

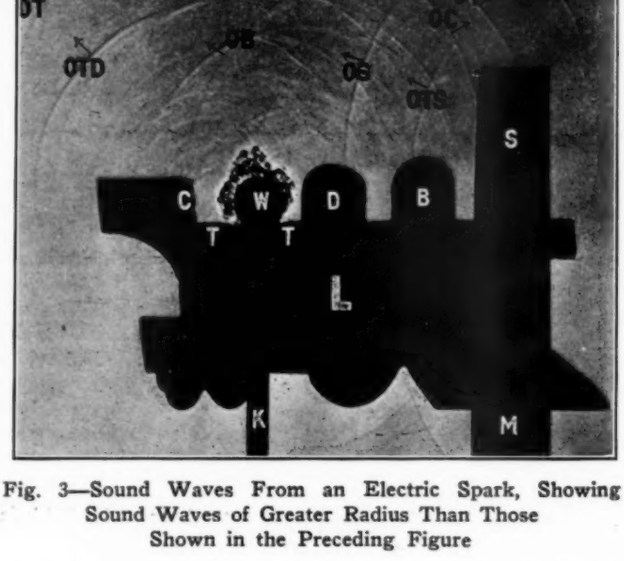


Fig. 3—Sound Waves From an Electric Spark, Showing Sound Waves of Greater Radius Than Those Shown in the Preceding Figure

wave has passed out of the field on the left of the picture and shows only at *O* at the upper right hand of the photograph. *O S* is a reflection of *O* from the stack *S*. *O T* in Fig 2 has expanded, struck the stack *S* and given us the wave *O T S* in Fig. 3. *O C* of Fig. 2 has just arrived at the stack in Fig. 3.

It is not necessary to trace all the waves that have been formed. It is sufficient to see that, owing to numerous reflections, the space above the model locomotive is filled with waves, that most of the sound energy is headed upward, and that there is not enough in front of the locomotive to show in the picture.

Owing to the shortness of the spark waves and the exaggerated dimensions of some of the parts of the miniature locomotive, Fig. 2 exaggerates the magnitude of the effects of reflection. It does, however, quite accurately represent their nature.

Sound Refraction and Absorption

The very undesirable sound distribution shown in curve *A* of Fig. 1 would be much worse in the case of a locomotive running at high speed. A locomotive standing on a turntable requires very little firing to keep up the steam required to operate the whistle. There is

little smoke from the stack, and what there is rises some distance before deviating much from a cylindrical form. It is very different when a locomotive is moving rapidly. When running, the exhaust steam is blown through the stack to increase the draft, causing smoke and hot gases to be ejected in large volumes. These, together with the convection currents from the hot boiler, are swept back over the locomotive, forming a blanket through which the sound of the whistle must pass.

It is a well-known fact that a part of the energy of

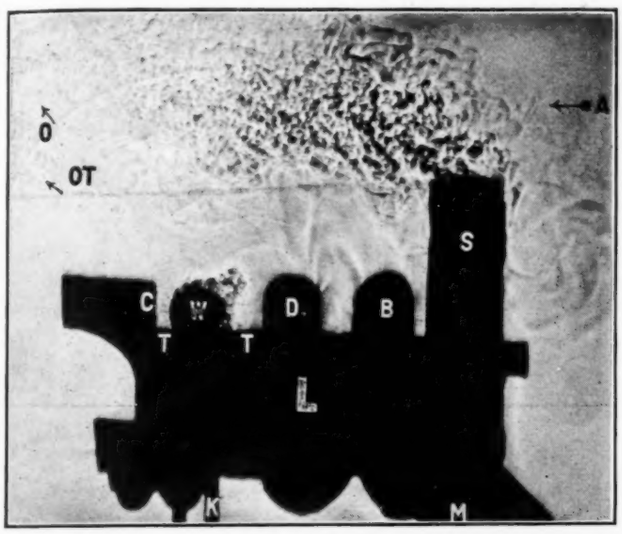


Fig. 4—Sound Waves From an Electric Spark Reflected From Parts of a Miniature Locomotive

a sound wave is reflected when it falls upon a stream of hot gases; some is absorbed in the stream itself and that which gets through is dispersed. The loss due to absorption and dispersion is much greater than one might imagine. If anyone doubts this statement, let him stand on one side of a bonfire and talk to some one on the other side. He may fail to make himself heard at all.

A suggestion of the magnitude of the effect may be gained by comparing Fig. 3 with Fig. 4. In the latter, a small bunsen burner was so placed that the tip of the flame was in the lower end of a brass tube, the upper end of which formed the smoke stack *S* of the miniature locomotive *L*. The hot gases issuing from the stack were blown back over the locomotive by means of an air jet in the direction of the arrow *A*. Observe that the original sound wave *O* is about the only one that shows in Fig. 4 and this only over the rear half of the locomotive. There is no trace of a wave near the stack where the gases are hottest. The wave has not been hidden by smoke. What one sees in the picture is not the photograph of smoke at all. The air inlet on the gas burner had been adjusted so that the gas burned with a smokeless flame. One does not see smoke when he sees the heat, really the convection currents, rising from the hot radiator of his automobile. However, hot gases may be quite transparent to light and not transmit sound.

If the disturbing effect of hot gases and heat currents were the only reason for locating a locomotive whistle ahead of the smoke stack, it would be a sufficient one. It is noted that the sound was weaker both in front of and to the rear of the locomotive than it would have been had the sound distribution been uniform, while at right angles to the track, particularly on the left side of the locomotive, the intensity was much greater than with uniform distribution.

Another factor which had to do with the sound distribution is the design of the whistle shown in Fig. 5. The usual cylindrical tube forming the resonator (bell) of a single tone whistle is, in the case of the chime whistle used in this study, divided by longitudinal radial vanes into five compartments or pipes, each of the proper length to give one of the notes of the chime. In Fig. 5, *T* is a transverse section of the whistle and *L* a longitudinal section, with the omission of the valve mechanism at *V*. The former shows the relative positions and cross sectional areas of the five pipes, while the longitudinal sections show the relative lengths of two of the pipes *C* and its octave *C'*. The fraction of the cylindrical steam jet *J* used in blowing each of the pipes as shown in the transverse section *T* was 26 per cent in the case of the lower tone and respectively 22, 19, 17 and 16 per cent for the other four tones. Thus 60 per cent more energy was used in blowing the lower tone than in blowing the upper tone of this whistle.

Since the quality and character of a sound depends on the relative intensity of the several tones which combine to form it, it is evident that the quality of the sound from a chime whistle depends to a degree upon which pipe of the whistle is toward the observer. This variation, with direction is accentuated when the whistle is placed near a steam dome, which interferes more or less with the normal functioning of that part of the whistle which happens to be nearest it. Intensity measurements showed

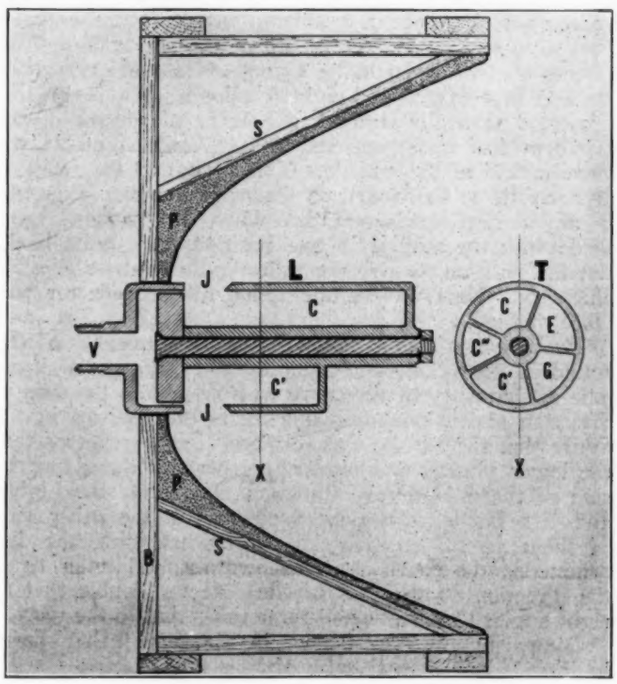


Fig. 5—Transverse and Longitudinal Sections of a Chime Whistle Mounted in a Modified Parabolic Reflector

considerable variation whenever there was a change in the orientation of the whistle with respect to the dome.

The writer would locate a locomotive whistle in front of the locomotive where it would be free from the several disturbing factors named. He would place it in a reflector of such design as to give a maximum of sound intensity ahead of the locomotive and of such size as to serve as a resonator and thus increase the intensity of the sound at the source.

In advocating the use of a reflector to direct the sound of the whistle along the track, the writer has continually met with the argument that such a device would be practically useless on account of the fact that the reflector could not be made large compared to the length of

the sound waves to be reflected. This limitation does, of course, affect profoundly the rate at which sound wave energy spreads out after the waves are outside the reflector. But it does not change the action of the reflector itself. The energy of the reflected portion of the sound wave can be headed in the right direction, and much of it will continue in the right direction to reinforce the wave originally projected in that direction.

In proof of this assertion, it is sufficient to call attention to the effectiveness of a megaphone as a sound director. It is strange that the belief that sound can not be reflected by anything except a very large body is so persistent and so general. A person who voices this belief is quite inconsistent when he places his hand to his ear in order to hear a speaker not easily understood with the unaided ear. Even a mule knows that sound can be reflected. He turns his ears in the direction from which the sound comes. It must be admitted that the cars are not as small as they might be, but they are not as long as the sound waves the mule must interpret.

To determine whether or not a reflector of moderate size could be made to exert any considerable directove force on the sound from a locomotive whistle, the chime whistle previously described in this paper was placed in a parabolic reflector, as shown in the cross section in Fig 5, in which all dimensions are to the same scale. The whistle was 6.5 in. in diameter and the aperture of the reflector 28 in. The reflector was made of plaster paris *P* cast in a wooden box *B*. The box was mounted on castors so that it could be turned on a platform about six feet in diameter and eight feet high. The steam line projected vertically through a hole in the center of the platform and was connected with a union joint to the valve end *V* of the whistle. This permitted the reflector and whistle to be rotated so that their common axis was in any desired horizontal direction. Experiments were made with the whistle in one position only, quite likely not the position to give the reflector the highest possible efficiency. Nevertheless, the action of the reflector was quite marked.

The curve in Fig. 6 gives the relative intensity of the sound in the 12 directions indicated by the radial lines. The dissymmetry of the curve with respect to the axis in direction one is doubtless due to the fact shown in the figure that the whistle was so placed in the reflector that the lower pitched and louder tone was produced on the side of the axis toward direction two, while the higher and less intense tone was produced on the other side of the axis, in direction 12. Notwithstanding the dissymmetry, the curve clearly shows a sound intensity in the direction of the axis of the reflector double that at right angles to the axis and three times that to the rear.

Comparing the result shown in Fig. 6 with that shown in Fig. 1, it is seen that by placing a locomotive whistle in a reflector in front of the smoke stack, the intensity of sound along the track in front of the locomotive was increased four times its value when the same whistle was located in the position *W* shown in Fig. 1. In direction two the intensity was five times as great. At the same time the intensity at right angles to the locomotive was correspondingly decreased. The maximum intensity could have been changed from direction two to one by rotating the whistle in the reflector.

No doubt the multiplying factor could have been further increased had the reflector been made of a material having a higher sound reflection coefficient than plaster paris. The placing of a locomotive whistle inside a reflector with its longitudinal axis parallel to the axis of the reflector has advantages other than those already noted. One is that all parts of the circular steam jet function, which is not the case when the whistle is mounted vertically and the locomotive is running at high speed.

As the whistle was rotated the character or quality of the sound changed noticeably as one after another of the several tones of the chime was silenced. The steam jet whose vibrations about the lip of the whistle produce the sound, must strike that lip in a particular way to give the best result. When a locomotive is running at high speed, the head-on pressure and the air currents about the sides of the whistle deflect the steam jet so that some portions of it function poorly and others not at all.

The writer remembers a case in court in which a railroad company was being sued for damages because of

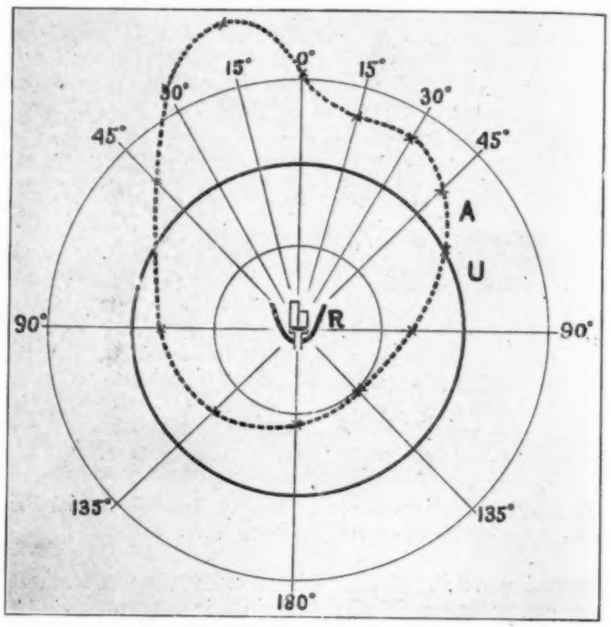


Fig. 6—Sound Intensity About a Chime Whistle Mounted in a Modified Parabolic Reflector

a crossing accident. Some of the witnesses testified that the engineer sounded the whistle for the crossing and that "it fairly screeched." A "screeching" sound is what one would expect from a vertically mounted chime whistle on a locomotive traveling at high speed. In the case of a whistle mounted in a reflector, as in Fig. 5, the body of air about it is carried along with it and the air pressure remains uniform on all sides of the steam jet, regardless of locomotive speeds or wind velocities. This permits the whistle to function normally at all speeds.

It would seem that locomotive manufacturers have attacked the problem of the inefficiency of locomotive whistles from one standpoint only—that of the intensity of the sound at the source. They have made their whistles larger and louder, and in order to overcome the objections of people who are disturbed by such intense sounds, they have tried to make the sounds "mellow," as pleasing as possible. It is the writer's contention that this method of attacking the problem is a mistake for several reasons, three of which I shall mention.

First, we should consider the efficiency of the sound as a warning signal a quarter mile and a half mile in front of the locomotive. We should consider the one to be warned, and not merely the sound source. If the effort to make the sound of the whistle "mellow" and pleasing results in a less efficient signal and consequently in greater destruction of life and property, it is a mistake.

In the second place, the increase in the sound intensity of locomotive whistles has necessitated an increase in their size and a consequent lowering of their pitch, a

move in the wrong direction. All the information that the writer has been able to get from several psychologists and from his own experiments is to the effect that the human ear is more sensitive to sounds of from 1,000 to 1,200 vibrations per second than to those of lower frequency. The pitch of the usual locomotive whistle is from one to two octaves too low for efficient signalling. Another advantage of the higher over the lower pitch is that the former is much more likely to attract attention on account of the sound being unlike the hum of automobile engines and gears, and other usual sounds.

In the third place, it would seem that the cost of whistle blowing is an item that has been given little attention. We have increased the size of whistles with little or no regard to the resulting increase in their operating cost. If this increase had brought about a greater whistle efficiency, it would be justified. The expected result has not been realized. A little consideration will convince one that we "pay dearly for the whistle."

According to the company that manufactured it, the chime whistle used in this investigation—a regular locomotive whistle—requires about 8,352 lb. of steam per hour when blown at 200 lb. steam pressure. The writer, by means of a counter and stop watch, made several estimates of the length of time whistles are blown. Observations were made on six different trains on four different roads, in Indiana and Illinois, the trips ranging from 50 to 220 miles in length. Considerable variation was found for different engine crews and for different roads. The

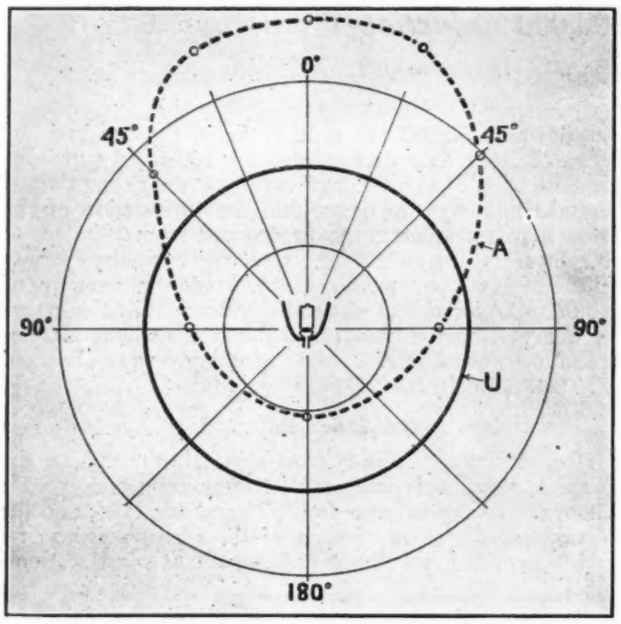


Fig. 7—Sound Intensity About a Single Tone Whistle Frequency 1,000 Vibrations per Second, in a Modified Parabolic Reflector

average ran something over two minutes per hour. Assuming this figure, a locomotive equipped with the whistle described and operated at the indicated pressure requires some 30 lb. of coal and 275 lb. of water per hour for whistling purposes only.

There are in use on a 24-hour day basis some 66,000 locomotives, and, on the average, one-third of these are in continuous use. To blow these whistles on an average of two minutes per hour would require the enormous total of almost 4,000,000 tons of coal and more than 26,000,000 tons of water per year. Why incur this enormous expense if a small high pitch whistle is more efficient and at the same time more economical in operation?

Curve *A* of Fig. 7 represents the sound distribution about a small whistle of the pitch recommended—frequency 1,000 vibrations per second. This whistle was mounted in a tin reflector, the relative dimensions of the two being about those shown in the figure. For testing the resonance of the reflector, its depth was changed three times by soldering an additional strip of tin an inch wide around the edge. Sound intensity observations were made with each depth. The resonance effect, while appreciable, was not great. It was sufficiently large, however, to warrant taking it into consideration in designing a locomotive whistle sound reflector. It will be observed that the total area of curve *A*, which is proportional to the total sound emission when the whistle was in a reflector, is greater than that of curve *U*, the emission when the whistle was vertical and without the reflector. The effect of the reflector, therefore, is not only to modify the distribution of the sound, but to increase its intensity at the source.

The steam required to blow the high pitch whistle whose sound intensity curve is shown in Fig. 7 was 2,500 lb. per hour as against 8,352 lb. for the chime whistle of Fig. 1. This means a saving of 70 per cent of the coal required for whistling purposes, which, on the basis of our previous estimate, would amount to some 2,800,000 tons in the United States alone. This is worth considering, not merely from the standpoint of a railroad expense item, but from the standpoint of fuel conservation.

Whistles of the higher pitch are used almost exclusively on the locomotives of England and other foreign countries.

An objection that has been urged against the use of a reflector on a locomotive whistle is that the whistle could not be used to signal to the rear of the train—to recall a flagman, for instance. This objection is not serious. Note, Fig. 7, that the sound intensity in the rear of a locomotive is a little more than half of what it would be if the whistle were vertical and without a reflector. It should be more than sufficient to signal the flagman. It should be remembered that the flagman is listening for the whistle; he is not in a closed car, nor is he disturbed by automobile or other noises. If it were desirable to increase still further the per cent of sound energy reflected in a forward direction, it could be done without destroying the resonance of the reflector by approximately doubling its length. If then the sound in the rear proved to be insufficient for signalling purposes, a second whistle could be mounted so as to face the rear, just as two headlights are sometimes used.

It is a matter of common observation that locomotive whistles on different roads, and frequently on the same road, differ greatly in pitch and in quality. When one hears a whistle, frequently he can not tell whether it is a locomotive whistle or a factory whistle. He becomes so accustomed to hearing such sounds that they may call forth no mental reaction whatever. If all locomotive and traction car whistles were of one pitch and others were prohibited from using whistles of that or near that pitch, the human ear would soon come to recognize that tone and instinctively associate it with danger. Not only this, but the volume of sound required to produce a mental stimulus would be greatly lessened.

The writer advocates a legal standard pitch for all locomotive and traction car whistles, and legislation that will guarantee railway companies its exclusive use.

The writer wishes to acknowledge his indebtedness to H. R. Kurrie, president; J. T. Strubel, master mechanic; and Joe Little, Bloomington yard foreman, Chicago, Indianapolis & Louisville, for their interest in this study and for the railroad equipment placed at his disposal.

The Outer Office of the Illinois Central Purchasing Department

Illinois Central Reduces Purchases Safely

Effective control seen in $30,000,000 *reduction in supply bill and* $10,000,000 *cut in reserves*

THE Illinois Central reduced its purchases of coal, rails and other commodities required in the maintenance, operation and improvement of the property from approximately $67,000,000 in 1923 to approximately $37,000,000 in 1924, or 45 per cent, while during the same period reserve stocks (excluding scrap) were reduced from $21,300,000 at the close of 1923 to $12,400,000 at the close of 1924, a decrease of 40 per cent.

Where the Illinois Central bought supplies at the rate of $900 per month per mile of line operated in 1923, its purchases in 1924 represented an expenditure of only $496 per mile of line. On the basis of tonnage they dropped from $1.68 for each 1,000 gross ton-miles, to $1.02, while they fell from an average of 36 cents out of every dollar of revenue to 22 cents, notwithstanding a 7 per cent drop in revenue. Likewise where the Illinois Central had a reserve at the close of 1923 equivalent to $3,600 per mile of line, the reserve at the close of 1924 was down to $2,000 per mile of line. On the basis of issues of stock they declined from a 160 days' supply at the close of 1923 to a 90 days' supply at the close of 1924. Considering only supplies within the jurisdiction of the stores department the turnover dropped from 180 days to 100 days. With an average reserve (excluding scrap) of $18,000,000 per month in 1923 and an average of $13,000,000 per month since the end of 1924, the carrying charges, on the basis of 15 per cent for interest, depreciation, obsolescence and handling, were reduced $750,000 annually.

All Stock Affected

How completely this change was felt throughout the range of supplies is indicated by the accompanying table where the total purchases for 1924 and for 1923, and the reserves at the close of each of these years, are segregated according to the A.R.A. standard classifications,

Comparative Purchases and Reserves on Basis of Mileage, Tonnage, Revenue and Operating Expenditures.

	Per Mile of Line		Per Mile All Tracks		Per 1000 G. T. Miles		Monthly Revenue		Mohthly Operating Expenses	
	Purchases	Reserves	Purchases	Reserves	Purchases	Reserves	Purchases	Reserves	Purchases	Reserves
1914	$270	$830	$170	$540	$ .80	$2.50	$ .25	$ .77	$ .33	$1.02
1915	250	950	160	610	.76	2.90	.25	.95	.33	1.25
1916	290	1100	180	710	.81	3.10	.26	.99	.36	1.36
1917	440	1540	270	980	1.02	3.70	.31	1.08	.43	1.54
1918	470	1970	290	1200	1.02	4.20	.27	1.12	.33	1.35
1919	490	2120	300	1330	1.26	5.50	.27	1.20	.31	1.32
1920	770	2680	480	1660	1.56	5.40	.33	1.16	.36	1.25
1921	590	2690	370	1660	1.47	6.40	.27	1.24	.33	1.47
1922	650	2130	400	1300	1.32	4.30	.27	.90	.35	1.15
1923	900	3080	550	1850	1.68	5.75	.36	1.24	.45	1.55
1924	490	2160	300	1500	1.02	5.20	.22	1.10	.27	1.42
1925 (8 mos.)		2040		1230		4.20		.94		1.14

*Note. Computations based on average purchases and reserves per month.

which also group the classes as nearly as practicable with reference to the department for which the supplies are acquired. Except for new rail, for wheels, tires and axles and for commissary supplies and ice, there were marked declines in practically all classes of expenditures. Thus while purchases of new rails rose from $3,423,000 in 1923 to $3,578,000 in 1924, tie purchases dropped from $5,699,000 to $831,000; signaling materials from $1,689,000 to $698,000; bridge and building lumber and structural steel from $3,381,000 to $1,100,000; "other track material" from $7,851,000 to $4,111,000; fuel from $19,769,000 to $13,130,000; stationery from $1,309,000 to $1,103,000, and all other materials (excepting ice and commissary supplies) from $21,888,000 to $9,914,000.

The declines in reserve stocks were quite as numerous and in proportion equally marked, tie reserves dropping from $4,141,000 at the close of 1923 to $2,047,000 at the close of 1924; rail from $698,000 to $148,000; signaling materials from $774,000 to $540,000; bridge and building lumber and structural steel from $2,086,000 to $1,166,000; other track material from $1,900,000 to $1,106,000; fuel from $2,558,000 to $565,000; scrap from $908,000 to $432,000, and all other material (excepting only ice and commissary supplies) from $8,315,000 to $5,380,000. The result was that total building and roadway purchases dropped from $21,335,000 to $10,319,000, or 50 per cent, and the reserves at the close of the year from $10,278,000 to $6,289,000, or 40 per cent, while the total maintenance of equipment purchases dropped from $18,440,000 to $7,146,000, or 60 per cent, and the reserves from $7,254,000 to $4,633,000, or 30 per cent.

per mile of track with $170 in 1914, notwithstanding a considerable increase in mileage and track. The average expenditure of $1.68 per 1,000 gross ton miles in 1923 is contrasted with an average of 80 cents in 1914, notwithstanding the large increases in tonnage; while the average expenditures of 36 cents per dollar of revenue and 45 cents per dollar of operating expenses in 1923 are contrasted with 25 cents and 33 cents, respectively, for 1914.

In the absence of accepted formulae for the effect one way or another of increases in traffic and higher standards of maintenance on the volume of expenditures for material, it may reasonably be assumed that the increases in traffic on the Illinois Central (50 per cent since 1914), together with the improvements made in equipment and property, can on the whole account for some of this increase.

Little need be assumed, however, concerning the effect of prices on these trends. In undertaking to compare values of one period with those of another the usual method is to compare the average unit prices paid for a representative list of commodities in one period with the average unit prices for the same list of commodities in another period. The more accurate method is to compute the average so that each price will influence the final result only in the proportion that the total expenditure for each commodity bears to the expenditure for all commodities. By the method of simple averages the prices paid in 1923 and 1924 on the Illinois Central were respectively 95 and 90 per cent higher than in 1914, while by the system of weighted averages involving half of the material the expenditures in 1923 and 1924 were respectively about 120 per cent and 93 per cent higher than in 1914. If the lower averages are used the expenditures in 1923 would have amounted to approximately $35,000,000 at 1914 prices, instead of $67,000,000, while the expenditure of 1924 would have been approximately $20,000,000, or about equal to the 1914 expenditures, notwithstanding increased traffic.

While price differentials are essential to an understanding of railway provisioning costs of the last decade, they

A STATEMENT OF THE VOLUME OF ANNUAL PURCHASES AND STOCK ON HAND FOR 1923 AND 1924.

Material	Yearly Purchases 1923	Yearly Purchases 1924	Reserves End Of 1923	Reserves End Of 1924
Frogs, switches and parts	$1,000,226	$314,143	$500,819	$250,434
Crossings and slip switches	140,347	116,110	53,575	49,566
Angle bars and rail joints	627,644	315,985	212,461	118,691
Tie plates and rail anchors	1,181,008	677,624	260,502	113,153
Track bolts, spikes, etc.	385,266	99,282	194,550	69,654
Track tools, misc. track material	253,657	86,853	129,696	63,864
Hand and motor cars and parts	190,738	45,223	15,434	10,728
Interlocking and signal material	1,366,592	566,103	636,577	453,657
Telegraph and telephone material	332,058	123,465	108,095	86,914
Brick, cement and clay pipe	430,812	203,779	126,429	57,637
Cast iron and concrete pipe	119,879	81,890	18,295	22,834
Concrete slabs, posts and piling	15,460	67,667	53,742	70,264
Lumber for bridges	2,064,840	453,243	1,415,163	777,803
Lumber for buildings	741,409	154,390	302,922	97,109
Switch ties	646,475	156,709	268,633	69,482
Cross ties	5,053,253	674,856	3,873,833	1,977,763
Bridges and structural steel	575,550	493,110	308,425	291,948
Ballast	983,260	874,360	402	339
Rail-new	3,423,116	3,578,095	698,842	148,682
Rail-second hand	22,608	7,857	704,638	1,280,065
Fuel and water station material	310,781	74,224	155,393	114,529
Scales and parts	67,345	54,032	22,399	41,581
Crane and derrick parts	355,971	67,166	80,466	72,222
Chemicals for timber	947,302	796,758	76,734	186
Total - Maint. of W. and S.	21,335,687	10,319,120	10,278,025	6,289,981
Bolts, rivets, washers, etc.	462,566	141,693	367,821	250,893
Springs	405,789	96,770	197,095	107,407
Flues and superheat material	708,068	199,080	337,036	227,424
Locomotive arch brick	87,058	62,579	26,087	21,017
Metal bars, sheets and tubing	129,226	88,095	41,340	43,336
Bar iron and steel, shapes	1,255,114	370,794	794,248	462,591
Sheet iron and steel	394,007	62,372	222,224	147,582
Locomotive forging, pressed steel	106,548	28,486	130,604	103,298
Car Forgings and fabricated shapes	1,506,879	329,009	433,767	284,518
Loco. cast. cyl. and wheel centers	857,144	326,366	569,814	398,901
Couplers and parts	1,139,049	145,703	231,145	38,753
Car castings	905,591	362,807	577,541	468,366
Car roofs and parts	297,718	52,954	48,402	32,119
Journal bearings	594,438	215,424	167,334	112,383
Brass castings	878,549	346,355	317,149	177,631
Air brake material	676,180	259,061	217,702	172,442
Standard locomotive appliances	145,873	50,641	91,297	61,025
Special locomotive appliances	298,984	14,322	146,485	68,310
Passenger car trimmings, etc.	325,073	263,601	99,948	95,086
Electrical material for loco.	254,720	113,882	93,271	63,754
Electrical bldg. power plant equip.	427,098	240,354	143,734	109,214
Passenger motor bus material	57,734	54,193	14,749	13,904
Fuel for shops and gasoline	454,587	267,785	60,251	16,093
Foundry supplies	36,461	25,595	10,791	6,534
Wheels, axles, tires	2,217,509	2,209,749	487,432	443,772
Lumber for cars and loco.	1,867,558	414,214	1,116,952	605,212
Power plant equipment	1,064,633	172,339	98,902	48,609
Boilers, fireboxes, frames	85,646	22,574	61,107	56,085
Trucks for cars and loco.	784,198	206,164	100,275	36,479
Material in process of mfr.		3,075	56,360	19,844
Total-Maint. of Equipment	18,440,998	7,146,036	7,252,883	4,633,671
Loco. train and station supplies	774,620	328,901	221,145	121,116
Grain doors	118,488	120,593	57,138	41,107
False floors	36,722	36,863	56,887	46,328
Oil house materials	888,346	899,255	117,261	135,561
Containers, returnable	12,450	14,237	4,190	3,738
Ice-sawdust, etc.	1,316,176	1,407,649	2,105	2,019
Fuel for loco.- coal	19,214,917	12,676,911	2,475,667	465,482
Fuel for loco. - wood	92,728	122,838	20,029	45,802
Fuel for stations and cars		64,407		38,131
Commissary supplies	904,277	961,433	95,994	111,425
Vending machine supplies	11,169	15,394	5,811	3,828
Total-Trans. Rail Line	23,360,902	16,645,481	3,052,037	1,014,536
Wrot and steel pipe fittings	392,538	172,935	207,576	139,238
Hardware, all kinds	335,815	160,198	114,808	67,817
Hand and small machine tools	482,415	165,929	70,622	31,093
Rubber and leather goods	341,979	206,561	117,114	80,273
Glass, paints, chemicals	1,248,714	917,084	155,918	92,434
Stationery	1,233,143	1,024,273	64,149	60,500
Postage stamps	76,811	78,774	1,618	951
Scrap, all kinds	75,211	133,855	909,166	432,902
Grand Total	67,333,203	36,970,266	22,224,116	12,843,396

Comparative Expenditures Reflect Prices

In comparing the magnitude of purchases and reserves for 1923 and 1924 with those of earlier periods, the total purchases are observed to have increased every year but one since 1914 until the total expenditure in 1923 of $67,000,000 was over three times higher than it was in 1914, when the sum was approximately $20,000,000. The expenditure of $900 per month per mile of line in 1923 is contrasted with $270 in 1914 and $550 per month

do not offer much explanation of the sudden drop in expenditures witnessed on the Illinois Central in 1923. The immediate cause of the change was retrenchment. Beginning in 1922 and extending through most of 1923 the Illinois Central enjoyed record traffic and revenues. These conditions were a stimulus to increased activities for which material was required. It is a practice on the Illinois Central as on other roads, with reference to staple articles, to regulate the stock by the number of days supply on hand, as determined from current issues, ordering sufficiently in advance to insure timely deliveries. With increasing monthly issues decreasing the number of day's stock on hand, stores officers were accordingly stimulated to enlarge their orders for replenishment; in addition, considerable quantities of material were ordered for new programs of work in immediate contemplation. In the fall of 1923, however, declining business led to a reduction in all lines of expenditure. That the material equation should be affected was inevitable. Its first effect was naturally to assist in creating the swollen reserves of the closing month of 1923 by postponing some of the work for which quantities of material had been ordered and at the same time contributing to the reduction in issues of staple articles below those anticipated by storekeepers when replenishing their stocks.

The manner in which these stocks were reduced is disclosed in the accompanying chart, which has three curves: one, showing the amount of stock on hand at the close of each month from January, 1923, to the present; a second showing the purchases each month during the same period, and a third curve showing, progressively, the value of the monthly issues. While the purchases are confined only to those supplies which are acquired

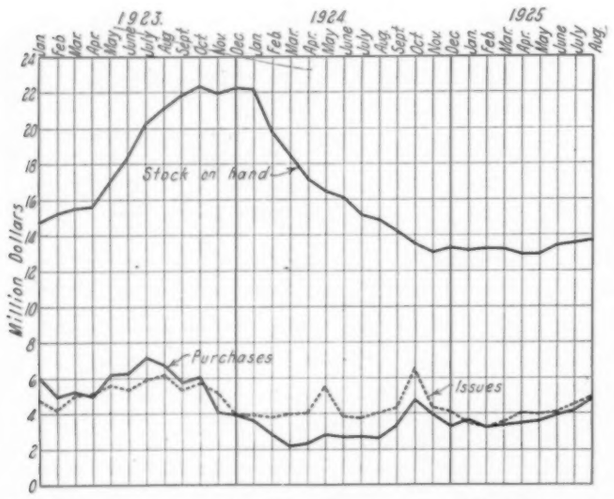


Chart Showing the Monthly Purchases of Materials and Supplies, the Stock on Hand at the Close of Each Month and the Monthly Disbursements

through the regular channels of commerce, both the reserves and issues are influenced by the products of reclamation or other activities on the railroad which have been added to the stock, or by the labor charges which have been incurred in altering or otherwise preparing supplies for distribution. For this reason complete reliance can not be placed in the curves for an accurate accounting of the total reduction seen in the purchases. They show, however, that in general the decline in purchases was the dual result of a reduced consumption and of purchasing below even the reduced consumption; the latter of course necessitating drawing on the reserves for current demands with the eventual reduction of the reserves.

Effective Stock Control Distinguishes Period

It is significant, however, that the entire readjustment progressed with little disturbance and injurious after-effects. When conditions affecting the maintenance of equipment are analyzed it is found that whereas the cost of repairs to locomotives and cars was $31,565,000 in 1923, it only dropped to $26,836,000 in 1924, notwithstanding the fact that these figures include labor as well as material charges. Also whereas the total value of the material actually used for all purposes by the mechanical departement in 1923 was $11,492,000, it was $9,007,000 in 1924. In the roadway department almost as much ballast and considerably more rail were used in 1924 than

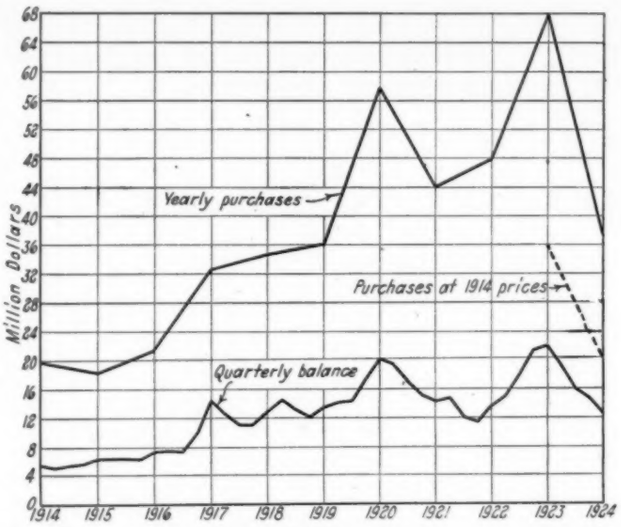
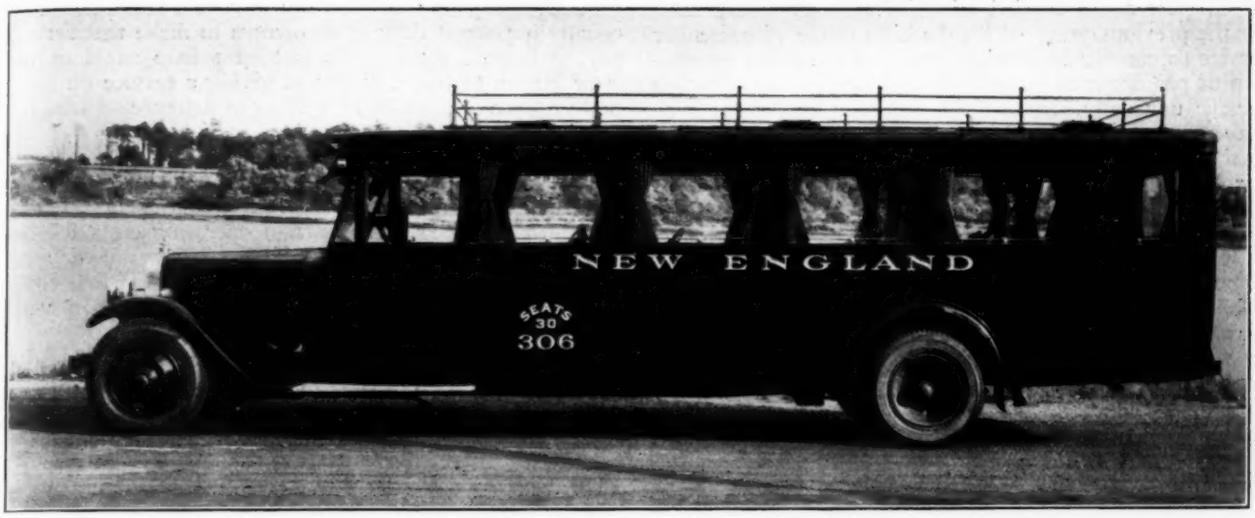


Chart Showing the Volume of Annual Purchases for Material and Supplies Since 1914 and the Trend of the Volume of Stock on Hand

in 1923, for both upkeep and new work, while the total material charges for roadway only dropped from $10,093,000 in 1923 to $8,700,000 in 1924. Capital expenditures decreased from $50,729,000 in 1923 to $28,900,000 in 1924, but from various considerations, among which is the fact that the total value of material and supplies held from month to month for all A.F.E. work, including much material chargeable to operating rather than capital accounts, averaged only about $2,887,000 in 1924, as compared with $2,925,000 in 1923, it is evident that this reduction in addition and betterment work only partially affected the material and supplies situation.

Thus the reduction in purchases for material from $67,000,000 to $37,000,000 in a year was not the cause or result of pronounced curtailment in departmental functioning. It is also significant that the trends of issues, purchases and reserves are not characterized by feverish spurts of traditional retrenchments, but rather by pronounced continuity and order, with expenditures at no time negligible and with the reserves maintaining an even keel throughout their journey downward. Both issues and expenditures are now on the increase, but, again, without displaying the precipitous rise that often follows overdraft, while throughout the period the reserves have remained almost stationary. The trends are indicative of the effective stock control that characterized the period.

(*A description of the more important methods and practices by which this control was accomplished will be presented in the next issue.*—Editor).



Standard Design of Bus Used by New England Transportation Company, New Haven Bus Subsidiary

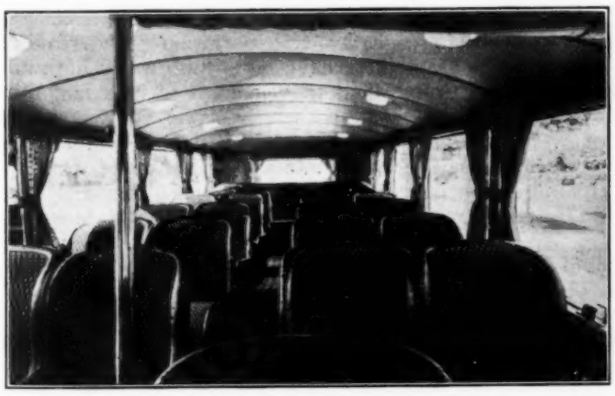
New Haven Optimistic About Its Bus Operations

Territory admirably suited to highway traffic and inroads serious—Railroad operation of buses offers solution

By Robert H. Newcomb

Assistant to Vice-President, N. Y., N. H. & H., and Director, New England Transportation Company

MUCH has been said and written about the New England railroad situation. Much has also been said about the New Haven System. In the past six years it has made a splendid record of accomplishment. This record has been possible only through the courageous foresight and the extraordinary skill and devotion to the cause of all who have had to do with carrying out the plans as outlined, while behind all this is a factor quite as valuable as either of the above in solving the problem of transportation success. That factor is public support and confidence. That the New Haven enjoys this to a marked degree has been conclusively proven this year.



Interior of New England Transportation Company Bus

This is to be the story of the newest evidence of the progressive spirit of the New Haven management in its effort to meet and overcome the disastrous effect on passenger revenues of the acute problem of highway competition. The story of how a disagreeable situation was squarely faced, a program worked out by which to overcome that situation, and the practical application of the program with the results that have so far developed.

NEW ENGLAND TRANSPORTATION COMPANY BUS ROUTES

State		Approximate Distance*	Round Trips Daily
Massachusetts.	Whitman to Bridgewater	7	10
	North Easton to Brockton	5	2
	New Bedford to Brockton	40	8
	North Attleboro to Providence	12	4
	Westfield to Easthampton	11	4
Connecticut...	Ridgefield to Branchville	3	9
	Danbury to Canaan	52	4
	New Haven to Easthampton, Mass.	72	4
Rhode Island.	Wickford Junction to Wickford	3	9
	Hope to River Point	3	5

* In the majority of cases, railroad mileage is u ed in this compilation and may not agree with the highway mileage.

Passenger Traffic Vital to the New Haven

Before starting on the story itself it will be well to consider the sources of gross revenues of the New Haven in comparison with other railroads of the country. Of the New Haven's gross revenue practically one-half comes from passenger traffic. The relation of freight to passenger income is approximately that of 55 to 45. It was not so long ago that of every 11 passengers carried in the United States one traveled over the New Haven and that proportion is not greatly changed today.

Now it comes about that in 1924 there was a falling

off in passengers carried of 8,240,948 below the total for the previous year. With the high grade of passenger service so consistently maintained, and the heavy proportion of passenger revenue to that of freight this situation became unusually serious. As everyone knows the New Haven serves the most intensively developed industrial section of the country. Whatever developments in transportation the future may have in store, it is obvious that it will be many years before industrial New England can exist without rail transportation for its raw materials and its finished product. The margin of profit in freight traffic in congested industrial New England is none too wide. While it is true that long haul passenger business on the New Haven can be conducted at a profit, yet the burden on the paying business was getting almost too heavy to bear because of the loss of single fare one-way riding and the extremely low commutation rates upon which practically all the short haul business is being done.

Facing the Situation

So serious had the situation become with the advent of the present year that it required no crystal gazer to see that necessary existing service was likely to be asked in the near future to carry a burden it could not support unless a way out could be found. That, then, was the cold disagreeable fact facing the management.

Meeting this situation with no hysteria, but with a grim determination to meet it, the first thing to do was to find out what was responsible for the condition. A committee was appointed for this purpose and the statistical report of that committee was a most illuminating document. Taking proper account of all the factors entering into manufacturing cost only, it developed that an average of $1.23 a mile is a fair estimate of cost for the operation of a steam passenger train on the New Haven. Each train so operated has a potential carrying capacity of at least 150 people. The report of the committee showed many branch line trains with earnings below 30 cents a mile and with fewer than 25 passengers per trip.

Privately Owned Automobile Largely Responsible

Further study seemed to prove that this condition (and it seems fair to say that the conclusion can be extended to cover the entire decrease in passengers carried) could be directly charged to the growing use of the privately owned automobile. With the owner of a private car the New Haven has no quarrel. It recognizes that habits and customs change and that business methods must change with them if business is to continue to prosper.

Business on Through Trains Improves as Schedules Are Shortened

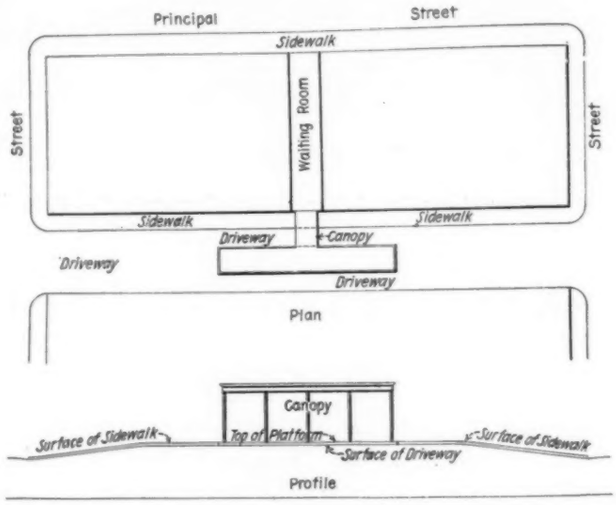
The committee's study also tended to show that as the longer distance trains were bettered as to running time by the elimination of frequent and non-productive stops, the patronage and earnings in those trains increased. It also showed that on certain remote sections of the system passenger trains could well be eliminated altogether so far as patronage was concerned, as on those trains there was no longer a question of earnings, the only thing left to consider was how to diminish the losses. With that report as a foundation the study was continued.

For some years this condition of decreasing passenger business has been pressing, and to meet it the New Haven conducted experiments with unit cars, self-propelled, on some of its branch lines. While these can be operated at approximately one-half the cost of a steam train yet they, too, had become unproductive of revenue and on certain freight lines were subject to the criticism of being as much in the way of necessary freight trains as if they were of financial importance.

Recognizing its absolute duty to render service, and its equally important duty to its owners to make that service pay, it became the obvious and immediate effort of the New Haven to find a means of giving a service on these non-productive lines of its system at a figure of cost below that of any method at present in use.

Bus Costs One-Fourth to Operate as Much as a Train

Men with knowledge of highway coach operation were consulted and their statements of operating costs fell below half the proven cost of operating a unit rail car, or a quarter of that of operating a steam train. If that could be proven to be so, and this form of transportation could



Design of New England Transportation Company Standard Bus Terminal

be substituted for certain rail lines, then one possible solution of the financial problem of lessening the burden on productive lines was in sight. Opinion was at first divided on the desirability of this drastic departure from established practice. As events developed, however, opposition to this method decreased.

New England Naturally Suited to Highway Travel

New England is essentially a section of short distances, lending itself to highway transportation very readily. Within recent years there have sprung up many highway bus lines. In Connecticut they make a serious factor in the problem of decreasing passenger traffic, and while they are by no means negligible in Rhode Island and Massachusetts yet they are not quite as serious a factor. The laws of Massachusetts are so drawn as to make it less easy to get proper authority for a purely intrastate operation. Where interstate business is concerned, of course, conditions are the same in all states.

The coming of these independent bus companies focussed attention on the feasible solution of the problem, a solution to which opposition had now been practically overcome.

Before anything more than study could be given to this solution, however, it was necessary to obtain permission from the several state legislatures to engage in an operation other than on rails. The final permission to do this was received from Massachusetts on June 17, last, and shortly thereafter the New England Transportation Company was formed.

The Highway Subsidiary and Its Policies

This is a subsidiary of the New Haven, created for the purpose of keeping the problem of highway operation

separate from that of operating on the rail. Its directors are all New Haven men. Through them its policies are shaped and its relations to rail lines are preserved. In making up its operating organization an effort has been made to secure men familiar with highway transportation. Subject to the factor of greater flexibility, these operating men merely carry out the policies as laid down by the directorate.

It was on August 3, 1925, that A. P. Russell, a vice-president of the New Haven, and president of the New England Transportation Company, appeared before the Public Utilities Commission of Massachusetts and outlined the general policy of the Company in the following language:

> Where the operation of the motor coach thus becomes desirable or necessary, it will, so far as practicable, be operated:
> (a) As an extension of and in connection with rail service, making connections with important trains that may be desirable in the public interest.
> (b) Parallel with and as feeders to rail service, thus enabling the rail service to be scheduled more rapidly and in consequence to become more attractive to the public.
> (c) For the filling of rail schedule intermissions where highway operation is justified but where passenger traffic is too light or freight switching too heavy to justify gas rail cars, and where through the operation of the highway service these gaps in the rail schedule can be filled, and
> (d) For a highway service, connecting with the rail service so far as practicable, between certain populous centers where the rails handle passenger travel, but between which the construction of new or the improvement in old highways has now created a situation in which the operation of the motor coach offers the only means of regaining former revenues now lost, and of more directly combining the two forms of transportation.
>
> This undertaking of the New Haven Railroad is for the purpose of affording the communities and the public which it formerly served, and which it now serves, the best rail service that is practicable, with such added highway motor coach service as may be necessary to supply the public needs and as may be in its interest.
>
> It desires to operate a combination service which will not only best protect the present railway investment and minimize the requirement for added investment of capital which the public will be obliged to support, but through this combination of service will afford the public adequate transportation in accordance with its justifying requirements.
>
> It desires to obviate uneconomical and unnecessary duplication of service, and so to provide a combination of the two services that the added use of the highways, already congested in numerous localities, will be minimized.

Approval of the principle and of the owning and operating clause of the law having been received the preliminary work of getting a few lines into operation was undertaken.

Types of Buses Used

The first thing necessary was cars to operate and orders were placed for two makes of six cylinder cars and two of the four cylinder type. Body color and design are as nearly alike as it is now possible to make them. None of the cars seat less than 25 passengers; they are of the de luxe type, less than 28 ft. long and 8 ft. wide (to comply with Massachusetts requirements) and are the equal of the finest coach on the highway. The standard color is maroon with gold lettering and black trimming.

Train and Engine Men as Operators

In engaging men to operate these coaches preference is being given to employees formerly in train or engine service. This is being done in recognition of the fact that decreasing passenger business has affected the number of employees, especially in branch line service. Men who transfer from the New Haven to the Transportation Company hold their rail rights for one year and their service record is considered continuous so long as they remain in the employ of the highway subsidiary.

A complete set of rules governing the operation of highway coaches has been adopted. Each operator is required to become as familiar with these rules as with those of the railroad itself, and to be prepared to be examined upon them. Every detail of operation is covered by the rules, and speed of the coaches is restricted to 30 miles per hour. Operating schedules are of course made up with this speed restriction as their limitation.

Operating Problems

The decision to go into the highway transportation is the least of the preliminaries to actual operation. There is at once presented the problem of housing, of maintenance, of terminals, of the handling of mail, baggage, and express, to say nothing of maintaining schedules during a New England winter. The question of fares is the least complicated as they are practically fixed by existing rail rates. The baggage problem is disposed of by a baggage compartment in each coach. That of mail and express has to be met in each case as it arises.

More study resulted in the selection of some eight widely separated lines on which to start the experiment. Delay in securing coaches and the time required to meet the demands of the laws of the several states held off actual operation of most of these until the latter part of September.

For the purposes of supervision these lines are operated in two divisions, corresponding to the two grand divisions of the New Haven itself, namely, Lines East and Lines West; Willimantic, Conn., being the dividing point. Over each of these divisions there is a superintendent in charge with a skeleton operating and mechanical organization. Both report to a manager whose headquarters are in Boston.

Over 1,800 Miles a Day

In this opening of operation there is included a total of 184.2 road miles with a daily total of coach miles operated of 1,828. The longest of the coach runs is 63.7 miles, while the shortest is 2.7 miles.

In addition to these eight lines there are three others operated jointly with existing carriers, whose mileage is not included in the statement. This joint operation is in pursuance of the theory that where territory is common to an established carrier doing a purely local business then the interests of that community in its local transportation are of sufficient importance to demand protection. Because the New Haven is seeking to serve rather than to monopolize, this course has been adopted. In each of these joint operations the details are handled by the local company so that figures are not at present available as to results.

Selection of lines was made in accordance with the program as outlined above. Certain branches were chosen where riding was extremely light. On those branches passenger train service was eliminated and a coach service substituted. Schedules were made up to protect connections to and from the several main lines involved, usually with more local service offered than was provided by train, and existing rail fares of all classes were protected. In all cases freight service is regularly maintained as heretofore, which has a direct bearing on the problem of winter operation as will be later developed.

Terminals

The question of terminals is one that to a large extent settles itself. Inasmuch as the whole plan is based on coordination and cooperation, and not at all on competition with rail lines, it is necessary to use the railroad stations, at least on one end of each run. As the stations are in existence it has seemed best to continue to use them wherever possible and avoid a duplication of investment. Of course there are some cases where the

railroad station is some distance removed from the center of a given community. In that event the flexibility of the motor coach comes into play. Where people have to go to a train, the coach can go to the people. So where better service can be given through the use of a separate terminal than a terminal for coaches alone is provided. But one such case has developed to date and a sketch of the layout in that case is shown herewith. It may be considered as fairly representative of the type of station required for coach use, including as it does waiting rooms and covered loading platforms.

Company Will Probably Undertake Own Maintenance Work

Because it is too early to define rigidly the scope of this type of operation no garage of any considerable size has yet been built. For the present private garages are being hired and maintenance and repairs are being looked after in them. Forty coaches are now in hand and several more lines contemplated for the earliest possible installation will call for a greater equipment. With the increase in the fleet it is probable that the company will find it advantageous to undertake its own maintenance and repair work.

No story of such an experiment in transportation would be complete without some word as to operating costs. While it is all too soon to assert with absolute certainty what such costs will ultimately be, yet enough has been learned so that it seems safe to say that an outside figure of about 30 cents per mile is conservative. The case of an owned line operating to connect three of the larger cities of Southern New England will bear that out. Those figures show average operating cost of 28 cents per mile for a period of three months. Depreciation is based upon three years' life.

Attracts Passengers Who Would Otherwise Use Their Own Cars

As bearing upon the soundness of the theory when applied to the problem of increasing passenger revenue and at the same time reducing operating costs, one case of a branch line may be cited as typical. On this branch, which is from a connection out of Boston, there were formerly three round trips of train service in commutation hours which served an average of 180 passengers each day. There are now operating 10 round trips of coach service, maintaining the same through connections and providing several more. The average daily riding has already been creased by 50 per cent, largely because the coach goes nearer to existing settlements obviating the necessity of a long walk or the use of the individual's automobile. Experience teaches that where a former rail rider now finds it desirable to drive to the station he is likely to keep on and complete the journey in his car. The coach reduces the necessity for using the private auto and seems likely to stimulate a return to the railroad coffers of some of the recently lost revenue.

Advantages of Co-ordinated Rail-Highway Service

In connection with the operation of highway coaches in a service co-ordinated with that of an existing rail carrier there are many advantages to the rider not found in the service offered by the independent company:

1. Existing rail rates are protected. In New England at least, rates of independent lines are considerably above rail rates, and commutation and student rates are never even considered.
2. The service is complete. Through journeys to any rail point may be undertaken, baggage checked and all the usual details covered.
3. In the event of a severe storm rail service may be immediately resumed to continue until the highways are open. Plans are perfected whereby rails that are to continue to be utilized for freight service, and so kept clear of snow, can be placed at the disposal of the highway subsidiary to protect its schedule of service by the operation of passenger trains during the existence of any emergency which suspends the highway service.

As time goes on, and the operation of this new subsidiary of the New Haven becomes more familiar to the riding public, it is felt that these features will be an aid in popularizing this undertaking.

Outlook Bright

To sum up:

Here seems to be an actual working out of an experiment based on sound theory; that of reducing costs and at the same time protecting service and probably increasing revenue—a theory based upon the principle that it is no longer possible to sell people something in a form that does not appeal to them, and a theory based upon the further principle that an effort must be made to offer transportation in a form that is considered desirable, with the added condition that those who buy transportation will, on their part, show a willingness to pay for that form of transportation enough to make it a paying undertaking.

Time alone can tell what the answer will be, but present indications point to a satisfactory outcome.

Northwest Roads Penalized by Eastern Lines Is Charge

THE Minnesota Railroad and Warehouse Commission at the hearing before the Interstate Commerce Commission on the application of western lines for increases in freight rates which was opened at Minneapolis, Minn., on November 30, charged that northwestern railroads are being penalized by the more prosperous eastern lines in the division of joint railroad freight rate revenues and that if there was an equitable division of revenues from these joint tariffs the northwestern lines would not require a 5 per cent increase in freight rates. The Minnesota commission petitioned the Interstate Commerce Commission "to proceed immediately in connection with the consideration of this case to an investigation of the division of joint rates, fares and charges enacted of the carriers in the northwestern region of the western district and determine and prescribe just, reasonable and equitable divisions thereof which shall give due consideration to the amount of revenue required to pay the respective operating expenses, taxes and a fair return on the railway property of the railroads of such northwestern region of the western district held for and used in the service of transportation as required by the act to regulate commerce as amended by the direction of Congress of the United States to the end that the undue prejudice now existing against the carriers and shippers in the northwestern region of the western district shall be removed and that the undue preference of the carriers and shippers in the western and eastern districts may be eliminated."

The petition was supported by the Iowa Board of Railroad Commissioners, the North Dakota Board of Railroad Commissioners and the Railroad Commission of Wisconsin. The petition of the Minnesota commission was objected to by R. C. Van Doren, vice-president and general counsel of the Chicago & North Western, and chairman of the railroad committee in charge of the pending case, who contended that new parties will be brought into the case. Ivan Bowen, a Minnesota commissioner, admitted that additional railroads will be forced to appear, but for that reason he had asked the federal commission to make the investigation. Mr. Van Doren moved to have

the petition and the argument stricken from the records. Examiner J. B. Keeler took the motion under advisement. The commission argued that the Panama canal is militating against the western carriers to the advantage of the eastern lines as one reason why the western lines should receive a larger portion of the division of joint rates. It also contended that an increase in freight rates would reduce rather than increase the earnings of the western lines because the increase would tend to deflect more shipments by way of the Panama canal and also enhance the business of motor truck lines. Mr. Bowen also called attention to the testimony of the carriers in the New England case which showed that the western carriers are paying an unfair part of joint tariffs. In this case he said the Interstate Commerce Commission ordered a 15 per cent increase in the division of joint tariff revenues for the New England lines from eastern lines but much of the increase was passed on to western lines and as a result the western carriers petitioned to be relieved.

The Minneapolis Real Estate Board, through its representative, Fred W. Putnam, a former member of the state commission, testified that for a period of five years the territory served by the northwestern carriers extending from Wisconsin through Minnesota, the Dakotas, and Montana, had experienced a severe financial depression which has not been entirely eliminated. The territory has not as yet reached a normal business condition and an increase in freight rates at this time with a resulting increase in marketing costs and producing costs, will retard development in the northwest. As a result the railroads will not realize the return in increased business that undoubtedly will come if rates are not further increased. It was also contended that during the past five-year period the railroads serving this northwestern territory have not suffered to the extent that the business interests of the territory have suffered.

Two witnesses representing the American Farm Bureau Federation testified in opposition to increases in rates on farm products. A. B. Pratt, traffic manager of the Northern States Power Company, protested against advances in coal rates especially as applied to shipments of lignite coal from North Dakota.

Associations Aid Shippers

RAILROAD service today is better than it has been in the past according to an address made by R. C. Ross, chairman of the Midwest Regional Advisory Board, at a meeting of the National Marketing Association on November 30 at Chicago. He outlined three main contributing factors which have caused an improvement in the performance of the carriers. The first was a change in the morale of those engaged in the railroad business which change has become a determination to demonstrate that the policy of private and competitive operation of railroads is correct. The second was the large investment made by the carriers in physical equipment such as cars, locomotives, yard and other facilities, which investments have been made possible largely by the ability of the carriers to attract new capital through more favorable legislation. The third and most important was that of organized co-operation between shippers and carriers.

He attributed the increase in co-operation to associations such as regional advisory boards, the National Industrial Traffic League, the Chicago Shippers' Conference Association, shippers' co-operative committees, the American Railway Association, and the Car Service Division. As a result of the increased co-operation between shippers and carriers he said, antagonism has decreased and as a result the Interstate Commerce Commission is not called upon frequently to settle disputes. Since a committee of the Chicago Shippers' Conference Association, together with a carriers' committee, has made the rules, rates and regulations regarding switching in the Chicago terminal the situation has been entirely satisfactory. He said that during the war and during the strike period of 1920, through the organization of shippers' co-operative committees working with the railroads on the problems which arose in the Chicago terminal, remarkable results were achieved. Instead of the carriers taking arbitrary action from the information which they had at hand, they conferred through the organization with the affected industry and decided upon a program which met the views and consequently had the wholehearted support of both parties.

He showed that although the regional advisory boards which have been organized during the past three years deal only with problems affecting the physical movement of traffic and do not concern themselves with freight rates, they have benefited the shippers and carriers through their membership of upwards of 8,000 people. He also called attention to the importance of the chambers of commerce and the banking industry which have taken a great interest in these organizations.

In commenting on regional advisory boards, he outlined their effect on the railways' personnel. "The discussions which occur at these meetings," he said, "impress upon the railroads the importance of co-operation with one another. They are realizing that they are linked in the great chain of transportation and in order for the machine to function properly a helping hand, in the way of cars and motive power to a line temporarily embarrassed, is to the advantage of all. The practical effect of this is illustrated by the action of the eastern railroads in providing empty equipment for the movement of the western grain crop this fall and last. For several months last summer the movement of empty box cars from the east to the gateways of Chicago and St. Louis alone averaged many hundred empties of western ownership per day, and this relocation was accomplished without the necessity for any special order by the Car Service division.

"Again the competitive instinct actuates the individual railroads to make as good a showing as possible at these meetings of the condition of their equipment and the efficient operation of their road so as to avoid the airing of complaints regarding their service before their competitors and the shipping interests of the territory."

Mr. Ross prophesied that eventually the Car Service division of the American Railway Association will be used as a medium through which information as to current market conditions will be made available promptly to shippers of agricultural commodities so that the flow to the large centers will be regulated and the glutting of markets with the consequent wide variations in prices will be avoided. He described a plan which has already been instituted by the central western board for the better distribution of lambs and sheep into the Denver and Kansas City markets by effecting a closer organization of the sheep producers, and then furnishing to each shipper a current report covering subsequent car orders for the commodity, previous shipments to the various markets, and the daily market conditions. He also stated that the inauguration of this movement pre-stages a new era in shipper-carrier relationship which will be a period of less litigation and less legislation. Insofar as operating and service matters are concerned the shippers and carriers through the medium of these boards are sitting together and settling their difficulties across the table in the manner pursued by other forms of business.

The C. M. & St. P. Investigation

Hearing opened with statements by and cross-examination of W. W. Colpitts and H. E. Byram

WASHINGTON, D. C.

HEARINGS in connection with the investigation of the Chicago, Milwaukee & St. Paul, which was ordered several months ago by the Interstate Commerce Commission, were begun before Commissioner Cox on November 30, and are to be continued later at Chicago and possibly other places. Commissioner Cox said the commission desired all pertinent information and that if necessary the scope of the proceeding could be widened by amendment of the order of investigation, although later he held that it was not intended to go into the subject of the proposed reorganization plans. He added that the officers and receivers of the Chicago, Milwaukee & St. Paul had been co-operating with the commission in a splendid manner and that the first evidence to be presented would be on behalf of the railroad company, represented by O. W. Dynes, general solicitor. The first witness presented by Mr. Dynes was W. W. Colpitts, of Coverdale & Colpitts, who had made a report on the condition of the road, earlier in the year, which was made public at the time the road was placed in receivership. He was followed by H. E. Byram, receiver and formerly president of the company, who said in part:

Statement by Mr. Byram

"With the acquisition of control of the Burlington railroad by the Hill interests in 1901, the management of the St. Paul was faced with the situation of being confined to the territory east of the Missouri river or build an extension of its own to the Pacific coast. The question has often been raised as to whether the St. Paul would be in the financial condition it finds itself today, if it had not incurred the financial burden attendant to the construction of this line.

"Comparison would indicate that the investment of the St. Paul in the Puget Sound extension, has proved no more unprofitable than the investment made by the Northern Pacific and the Northwestern since 1909. For the St. Paul, the years 1923 to 1924 show a loss in return on investment as compared with 1908 to 1909 of 3.80 per cent. For the same period, the loss in return on investment of the Northern Pacific was 3.84 per cent. For the Northwestern and Omaha combined, the loss in return on investment for the period was 3.84 per cent as compared with 3.80 in the case of the St. Paul and 3.84 per cent for the Northern Pacific. I think there is in the minds of some the belief that as a result of the issuance of securities for the purpose of raising funds for the construction of the Puget Sound line, the interest rate of the St. Paul is higher than those of its neighbors. A comparison of the per cent that the interest is of investment in road and equipment and the average interest rate for 1924 of the St. Paul, Northwestern and Omaha, Great Northern and Northern Pacific, does not bear this out. These figures are as follows: Average interest rate for the St. Paul 4.69; Northwestern and Omaha combined 4.84; Great Northern 5.36; Northern Pacific 4.63.

"There is a general impression that the business of the Puget Sound extension has largely been drawn from other trans-continental lines serving that territory. This is not so. For the year 1924, the revenue accruing to the lines west of the Missouri river amounted to $24,407,900, of which $15,384,825 or 63 per cent was derived from business originating or terminating at non-competitive stations. These figures show clearly that at least two-thirds of the business originating or terminating on lines west of the Missouri river, is to or from points local to the St. Paul and not served by other railroads.

"The abandonment of a line with the business indicated by the above figures, would cause a loss in property values in the territory it serves considerably in excess of its cost. If this is so and these lines are a public necessity and their abandonment would be destructive of large property values and inimical to public interests, then the conclusion must be that the enterprise was justified.

"Graphs show for each of the years in the period 1916 to 1924, the relationship between revenues and expenses and the spread that has taken place since 1916 due to the greater increase in the cost of than the charge for this service. These diagrams have been introduced for the purpose of showing that the inadequacy of the net revenues of the St. Paul is not due to any cause of weakness inherent to it, but to conditions which it shares with its neighbors. These diagrams will show that the unfavorable showing in respect to the net revenues of these northwestern carriers is not due to a lack of efficiency in the management and operation of the properties, as their increase in unit cost since 1916 has been considerably less than in the case of the roads in the eastern and southern districts.

"Regarding the Panama canal competition: Had the tonnage which without the canal would have had to move by rail if it moved at all, moved by rail and been equally divided between all of the trans-continental lines, including the Canadian Pacific, we estimate the increase in gross revenues of the St. Paul would be in the neighborhood of $15,000,000 per annum.

"Regarding the advantage of leasing the Chicago, Terre Haute & Southeastern: The St. Paul has secured for many years to come an adequate and uninterrupted supply of good quality coal for its own use from a field 75 miles nearer Chicago than the southern Illinois fields, thereby avoiding the expensive operation and delay due to lack of a continuous supply which previously existed, and at the same time effecting a saving in freight charges amounting to $2,000,000 annually. For the year 1925, the Chicago, Terre Haute & Southeastern Railway will, through additional revenue on commercial coal, better divisions on east bound business, and a saving in freight charges to foreign lines on company fuel, show a net profit to the St. Paul in excess of $3,000,000.

"Regarding the advantages of acquiring the Chicago, Milwaukee & Gary: The St. Paul has secured an outlet for its company coal originating on the Terre Haute and destined to points south and west of Milwaukee, thereby avoiding the expense and delay of movement through the Chicago terminals. The St. Paul enjoys a large and increased business at its Rockford station, which amounts at the present time to over $500,000 a year more than prior to the acquisition of the Gary.

"It has been suggested that there was undue haste in calling for a receiver of the property and that had sufficient effort been made by the board of directors, a receiver might have been avoided, and particularly if the

aid of the government had been sought, such a consequence might have been avoided. I am satisfied in my own mind that every possible way of meeting this maturity and avoiding a receiver was considered by the company's bankers and its board of directors. It seemed clear that on account of the fixed charges and large maturities falling due in the next few years and the unsatisfactory earnings of the company, the board of directors would have failed in its duty if it had attempted to carry on under the present capital structure of the company."

Mr. Colpitts' Testimony

Mr. Colpitts' testimony was based mainly on his report, which he said he had been asked to make by Mr. Byram for the board of directors, and in which he had found that a reorganization of the capital structure was necessary to reduce the fixed charges and make it possible to raise needed additional capital. In outlining the causes for the financial condition of the road he mentioned the failure of the territory served by the Puget Sound extension to develop as expected, the greater increase in operating costs than in rates, Panama canal and highway competition and heavy per diem charges because of inadequate equipment. He said that the St. Paul, unlike some other roads in its territory, had not the support of a considerable dividend income from other roads and that the Burlington dividends amounted to three-fourths of the dividends paid by the Great Northern and Northern Pacific.

Both Mr. Colpitts and Mr. Byram were cross-examined by J. J. Hickey, attorney for the commission, with reference to the wisdom of the company's policy in building to the coast and in acquiring the Terre Haute and Gary roads at a time when it was not earning its bond interest. Mr. Hickey asked if a policy of retrenchment rather than one of expansion would not have been better and pointed out that the Terre Haute, for which the St. Paul incurred obligations amounting to over $19,000,000, had earned deficits regularly both before and after its acquisition. Mr. Byram said that the transaction had resulted in a direct profit to the St. Paul treasury each year because the saving on coal exceeded the operating deficit of the Terre Haute. Mr. Hickey asked Mr. Colpitts the average rate of bond interest paid by the St. Paul and when the witness replied that it was slightly under 5 per cent he asked if the Puget Sound line had ever paid that much on the investment in any year. Mr. Colpitts said that it had paid more than that in several years but Mr. Hickey asked if the investment of some $13,000,000 in advances to the Milwaukee Land Company should not be added to the investment. Mr. Colpitts said it was a necessary part of the project as it was intended to promote the development of traffic for the line. Mr. Colpitts said that if it had been known how much traffic the Panama canal would take the Puget Sound extension would probably not have been built and Mr. Byram said that the failure of the extension to earn as well as was expected of it and the desire to maintain dividends on what had long been regarded as a gilt-edged stock might account for the failure of the road to maintain an adequate supply of equipment.

Mr. Hickey also questioned Mr. Colpitts regarding an item in the statement of savings effected by the electrification of the line through Montana, covering the release of steam locomotives to other parts of the system. He brought out that many of the locomotives were stored because they were not needed elsewhere, but Mr. Colpitts said that it was entirely proper to credit the electrification with their release. When Mr. Hickey asked if he had discussed his report with bankers he said he had done so only in most general terms with Mr. Hanauer of Kuhn, Loeb & Co., but that Mr. Hoyt of the National City Company was a member of the party with which he had made an inspection trip over the line.

Mr. Colpitts was cross-examined by H. L. Ekern, attorney general of Wisconsin, regarding the wisdom of building the Pacific coast line, which Mr. Ekern referred to as a duplication of existing facilities, closely paralleling the Northern Pacific. Mr. Colpitts said at the time the line was begun in 1906 both the Great Northern and the Northern Pacific were swamped with traffic and that the paralleling of the Northern Pacific was largely due to the topography of the country through which it was necessary to pass. Mr. Ekern asked if the stock market had not registered its condemnation of the project but Mr. Colpitts said he thought the price of St. Paul securities had kept up until shortly before the St. Paul passed its dividend in 1917 and Mr. Dynes remarked that this was after the passage of the Adamson act.

The question as to whether the subject of reorganization plans should be considered was raised when an attorney for a Cincinnati stockholder asked permission to make a statement expressing opposition to any plan that should require a deposit of stock. Commissioner Cox said that no reorganization plan has yet been submitted to the court, which would have jurisdiction over it, and that it would not come before the commission except in the form of an application to issue securities under it and he thought that proposed plans ought not to be considered at the hearing. Mr. Dynes said it would give the public an erroneous impression if the commission should consider proposed plans at the hearing and he said that thus far there is no official plan.

Under cross-examination by Mr. Hickey, Mr. Byram said he had estimated the loss of revenues due to canal competition by allowing his road one-tenth of the canal traffic, after deducting fuel oil which probably would not move by rail, and then had cut the amount in two to allow for the traffic that now moves inland to and from the ocean and other contingencies.

Mr. Hickey on cross-examination asked Mr. Byram numerous questions regarding the financial condition of the road during the past five years and regarding its application to the government for loans and renewals of the loans after the company had unsuccessfully applied to Kuhn, Loeb & Co., the National City Company and other New York bankers for assistance in floating short term notes. Mr. Hickey also brought out that the St. Paul had advanced money to the Terre Haute and received in return bonds of the latter company which it had sold at a considerable discount, and that it had issued approximately $100,000,000 of its 7 per cent stock for the Puget Sound extension and advanced the money to the Puget Sound company at 4 per cent. He also questioned in some detail the figures as to the saving from electrification, which Mr. Byram said amounted to $12,400,000 on an investment of $15,625,739. The attorney also asked some questions as to whether the Binkley Coal Company, on whose application the receivers were appointed, was a "clamoring creditor" or was acting in a friendly way, and whether the road actually owed it $125,000, but Mr. Byram said he knew nothing of the details pertaining to the application. Regarding the Milwaukee Land Company, Mr. Byram said the lands owned are worth much more than the investment of $13,000,000 but that that much could not be borrowed on them as collateral. Mr. Hickey asked if they are not worth nearly $50,000,000 and if a real estate mortgage could not be placed on them. Mr. Byram said they had never been inventoried at anything like that figure but that probably a loan could be made on them. Mr. Byram said that the company might have obtained money to meet its 1925 obligations but that that would

have afforded only temporary relief because there were additional maturities amounting to $209,000,000 up to 1934.

Commissioner Campbell came into the hearing room to object to any impression that the Panama canal had caused the road's difficulties but Mr. Byram said he had mentioned that only as one factor in the situation. Commissioners Woodlock and Eastman also sat in the hearing part of the time and participated in the questioning. Mr. Ekern's cross-examination of Mr. Byram was postponed until a later hearing.

Testimony of S. H. Fisher

Efforts of the board of directors to avoid a receivership were described by Samuel H. Fisher, one of the directors, who served on a special committee appointed by President Byram in June, 1924, to co-operate with him in considering ways and means to meet the company's impending maturities of 1925. Mr. Fisher said in part:

"The directors of the Chicago, Milwaukee & St. Paul Railway Company have for several years considered the pending maturity of the European loan of 1910 and the 4%-Gold Loan of 1925, aggregating approximately $48,176,654.66. This problem was made more difficult by the fact that in addition to these loans, there were other immediate maturities in the following years, making a total maturity within ten years of over $200,000,000. This does not take into account the equipment trusts or underlying divisional bonds maturing in those years.

"Refunding of these loans would constitute one of the largest operations in the history of railroad financing. The problem was further complicated by the fact that for several years before 1923, the company had been unable to earn its fixed charges and had practically exhausted its available resources in borrowings to meet its current obligations and the necessary additions and betterments, and its credit had been so depleted that its securities were selling at a greatly reduced market value.

"The special committee first met on the morning of June 25, 1924, and later on July 2 and 22, 1924. After consideration of the resources and needs of the company, two plans were considered in detail.

"In the latter part of the summer of 1924, the committee conferred with officers of the National City Company and partners of Kuhn, Loeb & Co., the bankers who had financed practically every issue of the company's bonds and notes for over 25 years, and submitted its second plan and discussed with them important questions, which naturally arose in connection with the plan. The subject was then deferred to a later date in the hope that the earnings of the fall months would show that the fixed charges for the year would be earned. As a large proportion of the traffic of the road is products of agriculture, its business is seasonal and its peak in the fall months. In the meantime, inquiry was made regarding the attitude of the government on various aspects of the question.

"In December, 1924, a further meeting with the company's bankers was held. The indications were then that the earnings would fall a million or two dollars short of the fixed charges. The bankers expressed no definite conclusion regarding the possibility of meeting the maturity, but suggested an independent examination of the company's status be made by competent recognized expert engineers before a definite conclusion was reached.

"A special meeting of the board was called for January 7, 1925, and at that time it was proposed to submit a comprehensive statement of the company's affairs and its outlook for the next five years, prepared by its officers. This memorandum showed that in spite of a possible theoretical annual increase of 2.44 per cent in total freight revenues, a net cash deficit of approximately $28,000,000 would probably result in five years. It was voted unanimously to employ the firm of Coverdale & Colpitts to examine the affairs of the Road, for while the directors had every confidence in the management and they themselves were prepared to accept the report and findings of the officers of the company, it was felt that in all fairness to the security holders, an impartial independent check of the company's affairs should be obtained at the time.

"About January 14, an intensive study of some plan of voluntary re-organization was begun, and by February 21, the committee had considered not less than seven of such plans. About March 3, Mr. Colpitts submitted a preliminary report, which he supplemented with a personal expression of his views to the members of the committee.

In general, his conclusions arrived at independently, were quite similar to those of the company's officers. The committee devoted several days, March 4, 5 and 6, to a careful study of Mr. Colpitts's preliminary report in comparison with the company's own figures, and the committee reluctantly came to the conclusion that a receivership was unavoidable.

"On April 1, among other items, there was due $969,502.50 as interest on Series A general and refunding mortgage-4½% bonds. As it was evident that a default would be made on and after June 1 on the payment of interest of other series of the general and refunding mortgage and other notes secured by this mortgage, the committee, acting on the advice of counsel, decided that a payment of this interest due April 1 would not be equitable as against the other securities secured by the same mortgage. It was then considered that immediate steps should be taken to acquaint the public with the situation. A statement to be issued to the public was carefully prepared and a special meeting of the board of directors was held March 17, at which Mr. Colpitts was present and made a full statement to the board of his findings and recommendations. While the receivership was precipitated because of the April 1 interest, it was also hastened because of rumors which were current and from which it was feared that a multiplicity of suits would soon be brought against the company."

H. E. Pierpont, traffic manager of the Chicago, Milwauee & St. Paul, said that the difficulties of the company have been due in part to the failure to receive sufficient revenue for the service performed and that the fault lies largely with the freight rate adjustment that has prevailed in its territory during the past fifteen years. This he said, was brought about by excessive competition between the rail carriers and with water lines and it was impossible to correct it by concerted action, while the Interstate Commerce Commission did not have until recently the power to advance rates. While the commission is now considering the western rate situation, quick action was impossible.

New Station of the Erie at Englewood, N. J.

Andrew Fletcher Dies Suddenly

President of the American Locomotive Company and well known marine engineer

ANDREW FLETCHER, president of the American Locomotive Company, died of heart disease on November 29 at his home in New York City. Two years ago he had an attack of pneumonia, which was followed by occasional cardiac disturbance.

While Mr. Fletcher devoted the greater part of his life to the field of marine engineering, he built a large reputation for himself in the railroad field because of his successful leadership of the American Locomotive Company during recent years. His business interests were wide in scope, his activities extending into the railroad and marine fields, the iron and steel industry and in oil and banking.

A friend who knew him well stated that Mr. Fletcher's outstanding characteristic in his professional career was his ability to temper enthusiasm by constructive conservatism and sound judgment. While he was always considerate of the feelings of others, he was a strong and forceful administrator. Although a pioneer in the introduction into this country of the steam turbine for ship propulsion and having a larger part in its initial development than any other American marine engineer, it is significant that in more than one instance he advised against its use, because in his opinion its installation was not advisable in the particular case, although this was in the face of urgent requests for turbine installations by prospective customers.

Andrew Fletcher

Mr. Fletcher came from a long line of shipbuilders of Scotch ancestry and was born in New York City on June 8, 1864. He was educated at the College of the City of New York, later studying naval architecture and marine engineering. Among the many important contributions that he made to American marine engine manufacture was his production of the first three turbine-driven vessels launched in the United States. The first was the Governor Cobb, followed by the Yale and the Harvard, fast boats operating between New York and Boston. It was Mr. Fletcher who changed the old side-wheel fashion for ferryboats, driving the boats with two propellers, one at each end. Later he added a further improvement, the double-compound Fletcher engine, which was stipulated as necessary by the New York Central when it placed a recent order for ferryboats.

Mr. Fletcher after serving as a director and a member of the executive committee of the American Locomotive Company for several years, was in December, 1916, elected as president, succeeding Waldo H. Marshall. He was also a director in the American Car & Foundry Company; American Locomotive Sales Corporation, of which he was president; Atlantic Gulf & West Indies Steamship Lines; Atlantic Gulf Corporation; Bucyrus Company; the Canadian Car & Foundry Company; Consolidated Iron Works, of which he was president; B. B. & R. Knight, Inc.; Lloyd's Register of Shipping for the United States; Montreal Locomotive Works, Ltd., of which he also was president; the Superheater Company; W. & W. Fletcher & Co. (North River Iron Works); William Cramp & Sons Ship & Engine Building Company; Richmond Locomotive Works, of which he was also president; and the North River Derrick Company. He was a member of the executive committee of the Atlantic Gulf & West Indies Company and a trustee of the American Surety Company. He was also a member of the Society of Naval Architects and Marine Engineers, American Society of Mechanical Engineers, American Society of Naval Engineers and the Institution of Engineers and Shipbuilders, Scotland.

YARDMASTERS do not come within scope of the hours of service law applicable to telegraphers and others handling train orders and may therefore work more than nine hours a day, according to a decision of the United States Supreme Court on November 30, which upheld the Atchison, Topeka & Santa Fe., the plaintiff, and overruled the opinion of the United States District Court at Chicago as well as that of the Court of Appeals. The attempt to limit the hours of service of yardmasters was made on behalf of a number of them employed on various railroads in Chicago. The claim that yardmasters came within the scope of the hours of service law applicable to persons handling train orders was based on the contention that yardmasters, in signaling to switch foremen the various tracks in the yards on which trains and cars are to be placed, are in effect transmitting orders for train movements. This view was upheld by the District Court at Chicago and, on appeal, by the Court of Appeals.

The decision of the Supreme Court in favor of the Santa Fe is of particular importance since it was expected that the yardmasters, if upheld, would attempt to secure punitive overtime under the Adamson act for all overtime accumulated since the passing of that law.

Frisco Wreck at Victoria, Miss., Due to Transverse Fissure

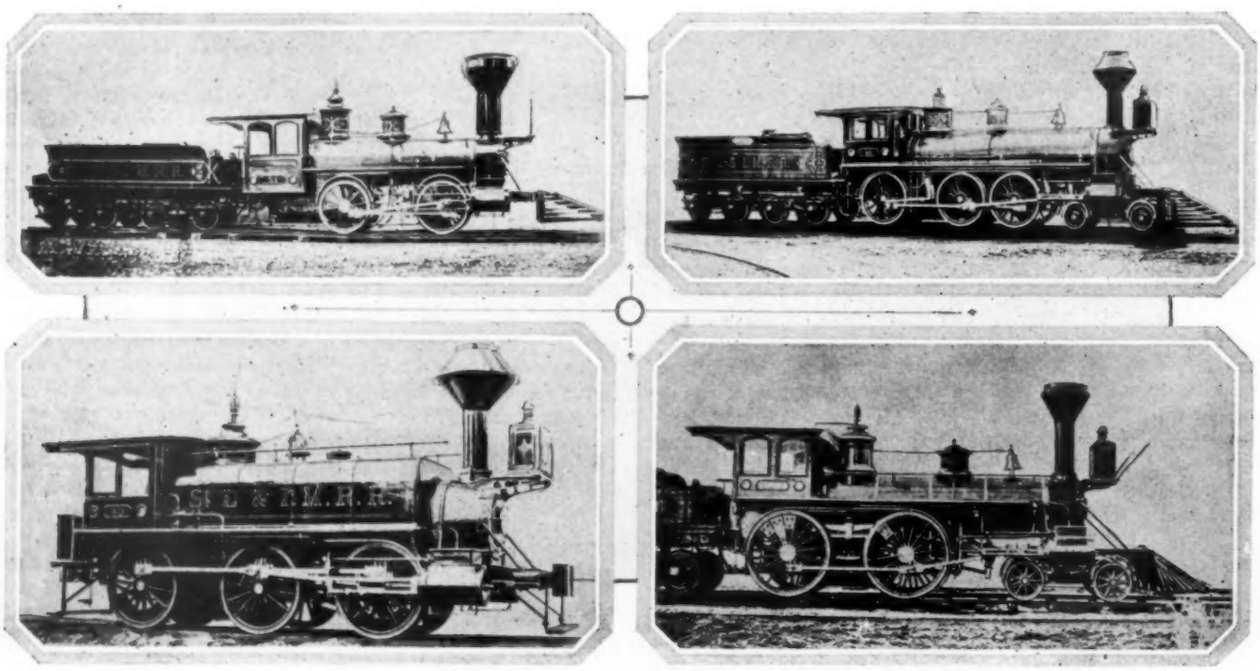
EARLY in the morning of October 27, St. Louis-San Francisco train No. 108, the Sunnyland, was derailed on a 40 ft. embankment a short distance south of Victoria, Miss., resulting in the killing of 23 people and the injury of more than 80 others. The derailment was caused by the breaking of a first quality open hearth rail of 90 lb. A.S.C.E. section rolled at the mill of the Tennessee Coal, Iron & Railroad Company at Birmingham, Ala., in October, 1918, and laid in track in April, 1919.

This rail was inspected by the Robert W. Hunt Company at the time of manufacture and the records of this company show that the chemical composition of the heat from which the rail was rolled conformed to standard specifications and that all of the rails from the heat, 180 in number, were accepted. The rail which failed, which was 33 ft. long, was a "G" rail well removed from the top of the ingot. It broke 13 ft. 8 in. from one end. The failure was due to a transverse fissure which, as shown in the accompanying illustration, extended to within 1-32 in. of the surface on the gage side of the rail and to within 1-16 in. of the top. Being thus entirely surrounded by sound metal it was impossible of detection prior to failure.

As is also indicated by the photograph the rail was not worn appreciably. The track conditions were exceptionally good, so that the rail was not receiving undue punishment by reason of inadequate maintenance. The train involved in the derailment was traveling north and the accident occurred on a tangent 2,300 ft. north of the end of the nearest curve on a one per cent descending grade. The roadbed at the point of accident was on an embankment about 19 ft. wide and the track was laid with 20 ties per 33 ft. panel with one foot of Birmingham slag ballast under them. A careful examination of the 2,300 ft. of track approaching the point of derailment showed only 13 ties that could be classed as defective in any way, or less than one per cent of the total number of ties, and no two of these occurred in the same panel of track. Even these ties were not decayed to the extent of warranting their removal from track and were considered good enough for more than a year of service. The track was fully tie-plated and spiked. The maximum variation of gage was found to be only ¼ in. wide and 3/16 in. tight.

The Rail Which Caused the Accident at Victoria, Showing the Transverse Fissure

The heavy loss of life occurred in a steel coach which went down the embankment, landing on end with such force that all of the passengers were thrown to that end of the car, carrying seats, hat racks and other fixtures with them. The car then settled on its side, again throwing the 69 passengers therein and the furnishings around and contributing to the heavy loss of life.



Some Reminders of an Earlier Day on the Missouri Pacific

General News Department

A strong argument against public ownership of railways and in favor of the private purchase of the Canadian National was made by Peleg Howland, president of the Imperial Bank of Canada, at the annual meeting of that institution held in Toronto last week.

The Traffic Club of Chicago recommends to Congress that the Interstate Commerce Commission be charged with the regulation of motor vehicles engaged as common carriers in interstate commerce; this by a resolution adopted at a special meeting on November 26.

A department of transportation will be established at the University of Toronto if the railways and other organizations interested in transportation problems and their solution will assist, according to an announcement made in Toronto last week by Dr. H. J. Cody, chairman of the board of governors of the university, in addressing the annual meeting of the Canadian Industrial Traffic League.

"Certificates of Mechanic" will be issued by the Chicago, Rock Island & Pacific to all its shop apprentices who have completed their four-year apprentice course in Rock Island shops. These certificates will bear the name of the graduate apprentice, the number of years he has served and the place of his employment, and will be signed by the superintendent of motive power and the master mechanic of the shop where the apprentice completed his course. The certificates will be engraved and appropriately decorated.

Canadian Railroad Employees Involved in "Rum Running"

Seven veteran employees of the Canadian National have been discharged as a result of information uncovered in an investigation of the shipping of bonded cars over the international border at Niagara Falls. These cars, which were bonded, carried liquor billed as merchandise for the United States. The dismissed employees are freight agents and yardmasters at Hamilton and Niagara Falls. The investigation was conducted by United States customs officers. Fifteen freight cars are reported to have been seized at Niagara Falls as a result of the investigation.

The Union Continuous A. T. C. on the Pennsylvania

The automatic train-control apparatus which is being installed on the Baltimore division of the Pennsylvania is the Union continuous track circuit control and forestaller, not the intermittent arrangement, as stated in the report of A. H. Rudd's address at Philadelphia, which was printed in the *Railway Age* of November 28, page 1005.

Mr. Rudd, reminding us of this error, objects also to our unscientific use of the word "originate," in speaking of the electric current which causes the automatic application of the brakes on a train. We are glad to remind the reader that the preceding train protects itself, not by closing a circuit but by causing one to open.

C. P. R. Awarded Medal for Toronto Exhibit

A gold medal has been awarded to the Canadian Pacific for the company's exhibit at the Canadian National Exhibition in Toronto this fall. The medal is in the form of a golden plaque on one side of which is a portrait of Premier G. H. Ferguson of Ontario.

The exhibit for which the award was made was one of the most striking on the grounds, and included a number of working models showing the scenic beauty and resources of many parts of Canada reached by the Canadian Pacific. A feature was the "Lucy Dalton," the locomotive which drew the first train into North Bay. Canadian Pacific steamships were also represented by colored models of famous ocean ports at which they call and by special models illustrating the various winter cruises arranged for the coming season.

D. T. & I. Employee-Stockholders

On October 9, the second anniversary of the Detroit, Toledo & Ironton investment certificate plan, 1,406 of the 2,966 employees, or nearly 48 per cent, had accumulated $479,391 under the savings plan. Of this amount $444,200 in certificates was held by employees and the balance, $35,191, represented the sum on hand toward the completion of payments. The average individual account was $341. During the past year deposits have increased over 95 per cent and the average individual accounts have increased nearly 105 per cent, but the number of employee-depositors has decreased 15 per cent. Four interest payments have been made during the past two years to holders of certificates, based on the earnings of the road. For the first two periods returns were based upon a 12 per cent annual dividend and for the last two six months' periods upon a 16 per cent yearly rate.

The C. N. R. Debt to Date

The total debt of the Canadian National now stands at $2,056,181,518, according to a statement issued in Ottawa last week. Of this total $1,142,268,435 is due to the Dominion government with accrued interest and $913,913,083 is due the public. In 1924, the debt due to the Dominion government increased $28,085,159; due to the public, $90,814,027. Comparative figures show that during the last six years the debt due to the Dominion government has increased $534,026,156 and that to the public, $140,949,117.

Commenting on the figures, the bureau's statement says: "The unpaid interest on government advances has been added each year to the principal, but no interest on the unpaid interest has been included. These advances include appropriations for the Canadian government railways for construction, additions and betterments, purchase of lines, etc., and for operating deficits for 1921 and subsequent years. Prior to 1921 operating deficits were provided out of consolidated revenues of the federal government. Construction expenditures include the cost of the Quebec bridge, but exclude the cost of the Port Nelson terminals."

Canadian Supreme Court Hears T. & N. O. Extension Case

After two days of argument the Supreme Court of Canada last week reserved judgment on the question of the right of the Nipissing Central, a subsidiary of the Temiskaming & Northern Ontario (owned by the Ontario government), to occupy Crown lands in the province of Quebec for the purpose of constructing an extension of the Larder Lake branch, in Northern Ontario, into the Rouyn gold field in northwestern Quebec. The point arises out of a reference from the federal cabinet in respect to the validity of section 189 of the Dominion Railway Act.

At the opening of the hearing on November 24 Attorney General Charles Lanctot of Quebec asked for an adjournment of the case. Whether argument was heard now or at the February sittings, he said, the case, which doubtlessly would be later taken to the Privy Council in London, Eng., could not be heard by the Privy Council before July next. On behalf of the Nipissing Central Railway, W. N. Tilley of Tortonto, opposed any adjournment. The construction of the proposed extension, he said, had been stopped until authority could be obtained to occupy Crown lands in Quebec so as to continue with the work. In the meantime, another railway was being built with the approval of the Quebec and the Dominion governments, while consent for the continuation of the work on the Nipissing Central was being held up. After some argument and comment by judges it was decided to proceed with the hearing.

New Equipment

Class I railroads during the first ten months this year placed in service 119,243 freight cars, according to reports filed with the Car Service Division of the American Railway Association. This was a decrease of 18,126 under the number installed during the corresponding period last year and 36,629 less than were installed during the same period in 1923. Of the total 5,428 were placed in service in October, including 2,086 box cars, 1,670 coal cars and 465 refrigerator cars. Freight cars on order on November 1 this year totaled 24,606, as compared with 40,760 on the same date last year and 48,571 in 1923.

Class I railroads during the first ten months in 1925 also placed in service 1,492 steam locomotives compared with 1,770 during the same period last year and 3,371 during the corresponding period in 1923. The same roads on November 1, 1925, had 218 locomotives on order compared with 358 on the same day last year and 942 two years ago. During October this year 150 locomotives were installed in service.

These figures as to freight cars and locomotives include new, rebuilt and leased equipment.

The Canadian Roads in October

For the month of October the net revenues of the Canadian National, after the payment of operating expenses, were $8,159,958, an increase of $3,466,115 over October, 1924, and of $2,974,941 over October, 1923.

October	1925	1924	Increase %
Railway operating revenues	$27,175,821	$22,840,698	18.98
Railway operating expenses	19,015,863	18,146,855	4.79
Operation, net	8,159,958	4,693,843	73.84
Operating ratio	69.97%	79.45%	....
Ten months			
Railway operating revenues	196,444,081	195,325,323	.57
Railway operating expenses	175,958,360	184,555,659	*4.66
Operation, net	20,485,721	10,769,664	90.22
Operating ratio	89.59%	94.49%	....

*Decrease.

October's gain in net earnings on the Canadian Pacific placed the system nearly $1,750,000 ahead of last year, and the 10-months showing in net is the best since 1917. Following are the gross earnings, operating expenses and net for October and for the 10 months with comparisons:

October	1925	1924	Increase
Gross	$19,569,188	$19,352,240	$216,847
Operating expenses	12,125,161	12,330,163	*205,001
Net	$7,444,027	$7,022,177	$421,849
Ten months			
Gross	144,243,276	148,711,039	*4,467,652
Operating expenses	115,163,327	121,242,979	*6,079,652
Net	$29,079,949	$27,468,059	$1,611,889

*Decrease.

Commission Over-Ruled in Car-Assignment Case

In the United States District Court at Philadelphia, Pa., on November 25, the order of the Interstate Commerce Commission requiring privately owned coal cars to be distributed with railroad-owned cars, pro rata, in times of car shortage, was declared unlawful, the argument of the plaintiffs being accepted on all points. The order of the Interstate Commerce Commission was made more than a year ago, but had been deferred and never put in force.

The opinion of the court, by Judges Woolley, Thompson and Thomson held that the order was unjust and unreasonable and an arbitrary exercise of power.

The suits in this issue were brought by railroads, steel, iron, coal, coke and public service companies numbering nearly one hundred, asking that the order of the commission be set aside. The commission had based its order on the conclusion that the "assigned car rule," as practiced by the railroads, was an unjust regulation. The complainants contended that the order in substance and intent was an attempt to regulate the mining industry through distributing coal production ratably among all mines desiring to operate and that it deprived plaintiffs of the value of their cars and of their right to have them used in time of coal car shortage.

The opinion of the court, written by Judge Thompson, said the use of private cars was a valuable legal right in which sums of money amounting to millions of dollars have been invested. It furnishes the only means by which car owners can procure an adequate fuel supply in periods of recurrent car shortage. "The order undertakes by indirection to regulate the soft coal industry in matters which do not constitute transportation service relating to commerce and are not within the regulatory power of the commission; it assumes without authority of law to restrict the lawful right of the railroads to obtain by purchase or ownership of mines the supplies necessary to their operation in the service of the public. The use of the railway fuel cars and private cars under the assigned car rule is not per se preferential. * * *"

The effect of this decision is to approve the prevailing system, under which mines that own their coal cars are entitled to receive all of these and, in addition, an equal share of such railroad-owned cars as may be available on the system which serves them. The commission is expected to take an appeal from the decision.

Thirty Millions in Pensions

From a study which has been made by the National Industrial Conference Board, New York City, it appears that, within the past year, industrial railroad and public utility companies of America have paid out more than $30,000,000 in the shape of pensions, the pension plans in some cases including provision for contributions by the employees.

The study covers 248 formal pension plans, embracing 2,815,512 active employees; and in addition there are 148 informal plans, operated on an individual merit basis. Under the formal plans, the average payment for 1924 was $506. The proportion of male to female employees covered by the plans is about three to one. Out of the total of 248 formal plans only 28 make provisions for contribution by the employees.

Of the 248 formal plans, the Conference Board makes a classification as follows:

Contributory, optional to employees		10
Of these, limited-contractual	5	
contractual	5	
Contributory, but compulsory		18
Of these, discretionary	4	
limited-contractual	12	
contractual	2	
Non-contributory		211
Of these, discretionary	168	
limited-contractual	43	
Not specified types		9
Total plans studied		248

The report sounds a warning that the only safe and scientific pension plan must provide for adequate funding. It is stated that pension plans to a large extent are still in an experimental stage. The contractual type has not been in effect for a long enough time or in a sufficient number of cases to afford data for conclusive calculations as to cost.

The Alaska Railroad

With reference to the revival of talk of scrapping the Alaska Railroad the Secretary of the Interior says in his annual report that whether the railroad should ever have been built is now beside the question. "We have it," he asserted, "and to abandon it despite the loss in its maintenance would amount to a reversal of the American policy of progress. This railroad was completed only in June of 1923. Its construction was hurried and some of its structures are flimsy and temporary in character, menaced by glacial rivers, and its tracks are underlaid by ice at some depth the year round. All of which makes the upkeep expensive.

"When the construction of this railroad was originally proposed the claim was made that with adequate transportation facilities mines in the interior of Alaska would be opened and flourish. In 1915, these minerals were valued at $32,790,000. By 1924 they had decreased to $17,457,000. Production of coal in Alaska in competition with the states has not been feasible. Neither has the cost of producing other minerals been sufficiently profitable to attract capital, although the government has provided the means of shipping them out.

"Conversion of the right-of-way of this railroad to a truck highway; construction of a branch railroad from Portage Creek to Portage Bay; abandonment of the line from Anchorage to Seward entirely, or the use of that division only in summer, largely for tourists, have all been suggested. There is little local commercial use for a railroad between Anchorage and Seward, as both are seaports. It might be maintained in summer, it is

suggested, as a pleasure road and the freight carried to Anchorage by water.

"Automobiles require hard-surfaced roads. These could hardly be built in Alaska for less than $50,000 a mile for surfacing and widening of railroad right-of-way. There are no such roads at present in Alaska and the effect of extremely cold weather on them is unknown. The alternate freezing and thawing of the surface in Alaska would be disastrous to truck roads, whether hard-surfaced or not. Gravel-surfaced roads are now impracticable in Alaska for heavy trucks except in periods when the roads are frozen.

"Automobile traffic would encounter similar obstructions from slides in winter, as do the railroads; their removal would be more expensive than similar clearings from the railroad right-of-way."

American Railway Association Elects New Directors

J. M. Davis, president of the Delaware, Lackawanna & Western Railroad, has been elected a member of the board of directors of the American Railway Association, to succeed W. H. Truesdale, chairman of the board of managers of that company, resigned. Fairfax Harrison, president of the Southern Railway System, has been elected to fill the vacancy caused by the death of Julius Kruttschnitt, chairman, executive committee, Southern Pacific Company.

One Hundred Dollars for a Name

The Chicago & Eastern Illinois is offering $100 for a name which can be used as a trademark for the railroad. A prize of $50 is also offered for the second best suggestion. T. C. Powell, president, is endeavoring to secure a nickname or trademark which will catch the eye, be expressive and be adopted by the public. The name must indicate the position and service of the railroad. The company has found that due to their simplicity, nicknames of railroads are retained and used by the public more frequently than the corporate names and feels that such a name for the C. & E. I. is desirable.

Cost of Railroad Fuel

The cost of fuel for road locomotives in freight and passenger train service (charged to operating expenses) for Class I railways, not including switching and terminal companies, amounted to $241,401,019 for the nine months ended with September, as compared with $265,771,476 for the corresponding period of last year, according to the Interstate Commerce Commission's monthly bulletin of fuel statistics. The average cost of coal was $2.74 per ton, as compared with $3.10 last year and consumption was reduced somewhat, while the average cost of fuel oil was 3.19 cents per gallon, as compared with 2.77 cents last year, and the consumption was increased. For the month of September the average cost of coal was $2.67, as compared with $2.91 last year, and the average cost of fuel oil was 3.18 cents as compared with 2.85 cents last year.

Great Northern Gets Certificates for Seven Additional Bus Routes

The Boulevard Transportation Company, one of the bus-operating companies recently acquired by the Great Northern, has been granted certificates of public convenience and necessity by the Minnesota Railroad and Warehouse Commission, covering the operation of seven routes in southern and western Minnesota. All seven of the routes lead out of Minneapolis. Objection to certain of the lines was offered by the Minneapolis & St. Louis.

In a statement accompanying the order, the commission said: "Patrons carried by the Boulevard Transportation Company on the Minneapolis-Willmar route (paralleling the Great Northern) for the first six months of 1925, numbered 88,102, and for the same period on the Minneapolis-Minnetonka route, 119,805 passengers were carried. This heavy patronage conclusively establishes that public convenience and necessity require the continuance of the service." The order declares that the communities served will be at an advantage if given more vehicle transportation. It points out that many of these communities are without Sunday train service.

C. M. Wickman, managing president of the Northland Transportation Company, the Great Northern's "parent" bus subsidiary, is quoted as saying that the Great Northern buses will operate throughout the winter on schedule unless hindered by blizzards severe enough to interrupt train service. The company has pledged co-operation with the state highway department to keep state highways free of snow.

Mechanical Division Adopts Standard Double Sheathed Wood Sheathed Box Cars

Two designs of double sheathed, wood sheathed standard box cars presented at the annual meeting of the Mechanical division of the American Railway Association by the Committee on Car Construction have been submitted to letter ballot and adopted by an overwhelming majority of the membership. Members numbering 313 and representing 2,450,755 cars owned or controlled, voted in favor of the proposed standard designs, with seven members representing 46,830 cars opposing, and 89 members representing 250,452 cars not voting. The results of this letter ballot are given in Circular D. V.-434. In addition to the adoption of standard car designs, the association has approved as recommended practice specifications for side frames and bolsters, coupler yokes and hatch plugs for refrigerator cars as recommended by the committee. The minimum wheel seat diameter of axle with 4½-in. by 8-in. journals is increased to 5¾ in., and the total load for car and lading established at 116,000 lb., this change requiring an amendment to the Interchange Rules of the Division which is approved, effective January 1, 1926. The proposition to withdraw the present bolster drawings shown in the manual and substitute the new bolsters shown with the standard car drawings is approved, effective March 1, 1926.

The results of five other letter ballots recently submitted to members of the Mechanical division have been tabulated and published in Circulars D. V.-429, relating to brakes and brake equipment; D. V.-430, couplers; D. V.-431, specifications for tests for materials; D. V.-432, wheels; and D. V.-433, loading rules. In each case the recommendations of the committees in their reports at the June meeting at Chicago were adopted by large majorities.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 165 Broadway, New York City. Next convention, May 4-7, 1926, New Orleans, La. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—John B. Wright, Westinghouse Air Brake Co., Pittsburgh, Pa. Meeting with Air Brake Association.

AMERICAN ASSOCIATION OF ENGINEERS.—H. Almert, 63 E. Adams St., Chicago. Next convention, June, 1926, Philadelphia, Pa.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—Grant Williams, 1341 Railway Exchange, Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 So. Michigan Ave., Chicago. Next meeting, June 1, 1926, Atlantic City, N. J.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, June 15-18, 1926, Montreal, Quebec, Canada.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—T. E. Welsh, Chicago, North Shore & Milwaukee, Highwood, Ill. Next convention, 1926, Baltimore, Md.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J. W. Welsh, 292 Madison Ave., New York. Annual convention, October, 1926.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borcherdt, 202 North Hamilton Ave., Chicago, Ill.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y.

Division I.—Operating—J. C. Caviston, 30 Vesey St., New York.

Freight Station Section (including former activities of American Association of Freight Agents).—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York. Next meeting, April 20, 1926, Dallas, Tex.

Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association.)—J. C. Caviston, 30 Vesey St., New York, N. Y. Annual meeting, June 23-24, 1926, Mount Royal Hotel, Montreal, Canada.

Safety Section.—J. C. Caviston, 30 Vesey St., New York. Next meeting, April 13-15, 1926, St. Louis, Mo.

Telegraph and Telephone Section (including former activities of the Association of Railroad Telegraph Superintendents).—W. A. Fairbanks, 30 Vesey St., New York.

Division II.—Transportation (including former activities of the Association of Transportation and Car Accounting Officers).—G. W. Covert, 431 South Dearborn St., Chicago, Ill. Next meeting, April, 1926.

Division III.—Traffic, J. Gottschalk, 143 Liberty St., New York.

Division IV.—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Annual convention, March 9-11, Chicago. Exhibit by National Railway Appliances Association, March 8-11.
Construction and Maintenance Section.—E. H. Fritch.
Electric Section.—E. H. Fritch.
Signal Section (including former activities of the Railway Signal Association).—H. S. Balliet, 30 Vesey St., New York, N. Y. Next meeting, March 8-9, 1926, Chicago, Ill.
Division V.—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual convention, June 9-16, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.
Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Next meeting, September 21-23, 1926.
Division VI.—Purchases and Stores (including former activities of the Railway Storekeepers' Association).—W. J. Farrell, 30 Vesey St., New York, N. Y. Next meeting, June 9-11, 1926, Atlantic City, N. J.
Division VII.—Freight Claims (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South Dearborn St., Chicago, Ill.
Car Service Division.—C. A. Buch, 17th and H Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—A. L. Moorshead, Industrial Engineer, Erie R. R., New York, N. Y. Annual meeting, June 23-25, 1926, Vancouver, B. C.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Annual convention, March 9-11, Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division V.)

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M. & St. P. Ry., 11402 Calumet Ave., Chicago. Annual convention September 1-3, 1926, Hotel Sherman, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, 1319-21 F St., N. W., Washington, D. C.

AMERICAN SOCIETY FOR STEEL TREATING.—W. H. Eisenman, 4600 Prospect Ave., Cleveland, Ohio.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—29 W. 39th St., New York. Regular meetings 1st and 3rd Wednesday in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division. A. F. Stuebing, Chief Engineer, Bradford Corp., 23 W. 43rd St., New York.

AMERICAN TRAIN DISPATCHERS' ASSOCIATION.—C. L. Darling, 10 East Huron St., Chicago, Ill. Biennial convention, July 18, 1927.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—E. J. Stocking, 111 West Washington St., Chicago. Next convention, January 26-28, 1926, Cleveland, Ohio.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Annual meeting, May 18-20, 1926, Los Angeles, Calif.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, 17th and H Sts., N. W., Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—S. A. Witt, Detroit Lubricator Co., Chicago. Meeting with International Railway General Foremen's Association.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Division I.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division II.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—Fred M. Condit, Fairbanks, Morse & Co., Chicago. Meeting with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 129 Charron St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, 514 East Eighth St., Los Angeles, Calif. Regular meetings, second Friday of each month, 514 East Eighth St., Los. Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—R. E. Giger, 721 North 23rd St., East St. Louis, Ill. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

CHICAGO CLAIM CONFERENCE. Personal Injury Section.—F. L. Johnson, Chicago & Alton R. R., 340 Harrison St., Chicago. Meets 12:30 p. m., first Monday each month, Sherman Hotel, Chicago.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—A. S. Sternberg, Belt Ry. of Chicago, Polk and Dearborn Sts., Chicago.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—Bradley S. Johnson, W. H. Miner, Rookery Bldg., Chicago, Ill. Meeting with Chief Interchange Car Inspectors' and Car Foremen's Association.

CINCINNATI RAILROAD CLUB.—W. C. Cooder, Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.

CLEVELAND STEAM RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, Hotel Cleveland, Public Square, Cleveland.

EASTERN RAILROAD ASSOCIATION.—E. N. Bessling, 614 F St., N. W., Washington, D. C. Annual meeting, May 13, 1926, Railroad Club, New York.

FREIGHT CLAIM ASSOCIATION.—(See American Railway Association, Division VII.)

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Next convention, August 17-19, 1926, Hotel Winton, Cleveland, O. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—Edwin T. Jackman, 710 W. Lake St., Chicago.

INTERNATIONAL RAILWAY CONGRESS.—Office of Permanent Commission of the Association, 74 rue du Progrès, Brussels, Belgium. General secretary, P. Ghilain. Next session of the Congress, Spain, 1926.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. B. Hutchison, 1809 Capitol Ave., Omaha, Neb. Annual convention, May 11-14, 1926, Hotel Sherman, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha Ave., Winona, Minn.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—F. P. Roesch, 1942 McCormick Bldg., Chicago, Ill. Meeting with International Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York. Next meeting, May 25-28, 1926, Hotel Statler, Buffalo.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.—(See A. R. A., Division V.)

MASTER CAR BUILDERS' ASSOCIATION.—(See A. R. A., Division V.)

MOBILE TRAFFIC & TRANSPORTATION CLUB.—T. C. Schley, 71 Conti St., Mobile, Ala. Regular dinner meetings, 6 p. m., on 2nd Thursday of each month, Cawthon Vineyard, Mobile, Ala.

NATIONAL ASSOCIATION OF RAILWAY TIE PRODUCERS.—J. S. Penney, T. J. Moss Tie Company, 720 Security Bldg., St. Louis, Mo. Next convention, January 28-29, 1926, Hotel Cleveland, Cleveland, Ohio.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Annual convention, November 9, 1926, Asheville, N. C.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York. Annual convention, April 28-30, 1926, Charleston, S. C.

NATIONAL HIGHWAY TRAFFIC ASSOCIATION.—Elmer Thompson, 12 East 53rd St., New York.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 825 South Wabash Ave., Chicago. Annual exhibition, March 8-11, Coliseum, Chicago, at convention of American Railway Engineering Association.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: E. R. Cott, Safety Agent, Hocking Valley Ry., Columbus, Ohio.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Annual dinner, December 17, Commodore Hotel, New York. Regular meetings, 3rd Friday in month, except June, July and August.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2d Thursday in month, alternately in San Francisco and Oakland.

PURCHASES AND STORES DIVISION.—(See American Railway Association, Division VI.)

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C. Next annual convention, June 8-11, 1926, Chateau Frontenac, Quebec, Canada.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 600 Liberty Bldg., Broad and Chestnut Sts., Philadelphia, Pa.

RAILWAY CAR MANUFACTURERS' ASSOCIATION.—W. C. Tabbert, 61 Broadway, New York.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—(See Am. Ry. Development Assn.)

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—Joseph Sinkler, Pilot Packing Co., Peoples Gas Bldg., Chicago.. Meeting with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION..—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 12, 1926.

RAILWAY REAL ESTATE ASSOCIATION.—C. C. Marlor, Room 1243, Transportation Building, Chicago.

RAILWAY SIGNAL ASSOCIATION.—(See A. R. A., Division IV., Signal Section).

RAILWAY STOREKEEPERS' ASSOCIATION.—(See A. R. A., Division VI.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division, A. R. A., June 9-16, Atlantic City, N. J.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A., Division I.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Next convention, November 16-18, 1926, Chicago. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Sunbeam Electric Manufacturing Company, New York City. Meeting with American Railway Association, Signal Section.

SOUTHEASTERN CARMEN'S INTERCHANGE ASSOCIATION.—J. E. Rubley, Southern Railway Shop, Atlanta, Ga. Meets semi-annually.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—J. L. Carrier, Car Serv. Agent, Tenn. Cent. Ry., 319 Seventh Ave., North Nashville, Tenn.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—W. R. Mau, Vanadium Alloys Steel Co., Latrobe, Pa.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo-Ajax Corporation, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 East 98th St., Cleveland, Ohio. Annual meeting, September 14-17, 1926, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—Bruce V. Crandall, 226 West Jackson Boulevard, Room 1001, Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, 1735 Monadnock Block, Chicago, Ill.

Traffic News

The Chicago & Alton, in conjunction with the Mobile & Ohio, conducted an excursion from Bloomington, Ill., to Mobile, Ala., on December 4 and 5. A rate of $25 was made for the round trip and tickets were honored in sleeping and parlor cars.

The Atchison, Topeka & Santa Fe has shortened several of its freight schedules 24 hours. Among these, fourth morning delivery has been established between Chicago and Denver and fifth morning delivery between Denver and Galveston, Tex. The schedule between Denver and Oklahoma City has also been cut 24 hours.

The Southern Pacific has opposed an increase in freight rates authorized by the Interstate Commerce Commission to apply on butter, eggs and cheese between points in California and Oregon. The present rate was made to meet water competition and the commission has ruled that the railroad shall not make long haul rates to meet water competition with a charge less than the tariff for an intermediate short haul. The Southern Pacific has obtained a postponement of the effective date of the increase from December 28 until January 27.

Silver Foxes Shipped from Alaska

One hundred sixty silver foxes valued at $160,000, destined to Norway, were shipped from Seattle, Wash., to New York, by the American Railway Express Company on November 20 to 25. The 60 crates were carried by the Northern Pacific to St. Paul, by the Chicago, Burlington & Quincy to Chicago, and by the New York Central to New York. This is the first of three trans-Atlantic shipments.

Southwest Shippers' Advisory Board

The tenth regular meeting of the Southwest Shippers' Advisory Board was held at Little Rock, Ark., on November 24, with 331 persons present representing all branches of industry; an increase in attendance of more than 50 over that at any previous meeting. The United States Department of Commerce was represented by George E. McLeod, of New Orleans, and the Department of Agriculture by W. F. Callender and W. A. Sherman, both of Washington, and C. S. Bouton and C. H. Robinson, agricultural statisticians at Little Rock and Oklahoma City. The Federal Reserve System was represented by Charles C. Hall of Dallas.

Presidents Gorman of the Rock Island and Baldwin of the Missouri Pacific and vice-presidents Green of the Cotton Belt, Hutchison of the Frisco and Safford of the Gulf Coast Lines were present and made talks at the meeting; also C. R. McDonald, assistant to the president, M.-K.-T.

L. M. Betts, A. R. A., outlined the car service and transportation situations. R. C. Andrews, district manager of the Car Service division, Dallas, gave a report of local conditions and a brief review of the transportation situation in the Southwest for the year just passing.

The Board voted to hold its next meeting at Brownsville, Tex., in March of next year. The wonderful development in that sub-tropical section of Texas has lately been attracting considerable attention.

Passenger-Train Congestion at Jacksonville

One feature of the great increase in business in Florida is delay at the Jacksonville terminals, arriving passenger trains sometimes being held out for two hours. These delays have been so serious that James H. Perry, of the Georgia Public Service Commission, recommends a reduction in the number of passenger trains between Atlanta and Jacksonville as a possible means of relieving congestion in Florida. This was said following conferences with representatives of the Interstate Commerce Commission and the Public Service Commission of Florida.

"A great deal of the present congestion in Jacksonville," says Commissioner Perry, "grows out of the acute condition at the terminal station there. Passenger trains are held from one to two hours in the yards coming into the station and they are delayed for as long as two hours in going out. This, of course, means that freight trains are often standing along the lines north and south of Jacksonville because of the delay to passenger trains. There are at present seven passenger trains leaving Atlanta for Jacksonville between 6:50 p. m. and 11:50 a. m. This is a result of competition between the Central of Georgia and the Southern for Florida traffic. I went to Jacksonville to attend the meeting of the commissions on a train with less than 50 passengers all the way from Atlanta. The train had five Pullmans, yet there were only four passengers in the car that I was in. It is true that the peak of the Florida travel has not yet been reached, but why not have a bit of congestion in connection with the movement of passengers rather than have all of it in the movement of freight? I am convinced that two trains a day, both on the Central and the Southern, could be eliminated, at least for a period of 30 days.

"This would mean a saving of approximately 1,300 train miles a day, making possible the movement of additional freight."

Mr. Perry said that several hundred cars of freight for Florida were being held in Atlanta alone, pending relief of this congestion.

The Boston & Maine's Successful Excursion Business

The Boston & Maine, summarizing its revival of low-price excursions since last July, reports that 47,248 persons have taken advantage of its various low-rate offers during the season. The statement says, in part:

The railroad excursion, popular before the advent of the automobile, is gaining new popularity. The patronage on several of these excursions surpassed in numbers any previous events of this kind to the points involved. The increased use of automobiles had indicated that the railroad's excursion patronage would be largely on long-distance trips, such as those to Montreal and Quebec, but most popular trip in a season of experiments which covered a wide range was to Old Orchard, Me. On Sunday, August 23rd, 4,227 persons thronged trains in the excursion to that resort from various points. In all, 11,416 persons participated in Old Orchard excursions during the summer.

The explanation of the popularity of this and other relatively short distance reduced rate trips, as disclosed in questionnaires, letters and in conversation by people who in many instances owned automobiles, is the general desire to avoid highway congestion with its strain and dangers, to enjoy a variation in the form of outing and, with the reduced rates, to save money. Several automobile owners replied simply, "Too many cars on the road."

The Boston & Maine carried a total of 10,173 persons on excursions to Montreal, 2,420 on two excursions to Quebec, and 7,748 on reduced rate trips to Boston from points in New Hampshire, Vermont, Maine and western Massachusetts. Excursions to Lake Winnipesaukee, to Niagara Falls and to Revere Beach (near Boston) were also successful. The 73 excursions held under various reduced rates of fare ranging from approximately one-half to three-quarters of the regular fares, included also trips to the White Mountains, Canobie Lake, Whalom Park, New York City, Lake George, N. Y., St. John, N. B., and Hampton Beach.

The concessions to excursionists this year in some respects were more favorable than any granted in the past half century. It became possible to hold Sunday excursions in Massachusetts for the first time under a more liberal interpretation of statutes, which previously had prevented such Sabbath operations by the railroad. The operation of a cafeteria car,—in place of the more expensive diner,—with light lunches available at popular prices, was an innovation.

The co-operation of train crews and employees of the road has aided materially in making the excursions attractive and popular. Train crews in some instances placed fliers and posters at prominent places, in their spare time, and switching crews similarly posted such notices in the course of their regular duties. Hotel and amusement resort proprietors, in expressing approval of the excursion plans affecting their centers, expressed the hope that they would be continued next year.

Excursions this year to Montreal, Quebec and New England winter sports centers, which have facilities for the accommodation of excursion parties over week-ends, are now under consideration. The first excursion to Old Orchard last summer was not held until August 2, and with an earlier start in 1926 the road looks for an improved showing.

Commission and Court News

Interstate Commerce Commission

Meat Rates Revised

An extensive revision of rates on fresh meats and allied articles from central western points to eastern points has been ordered by the Interstate Commerce Commission in the case of John Morrell & Co., et al. v. New York Central et al., with which were combined several other complaints.

Emergency Coal Rates Ordered

"Because of imminent shortage of fuel for household use in New England and some portions of the middle Atlantic states," the Interstate Commerce Commission on November 28 declared an emergency to exist such as is contemplated by paragraph 4 of section 15 of the interstate commerce act, and that the public interest requires that the suffering which would result from a coal shortage could be avoided to a large extent by the prompt establishment of joint all-rail freight rates and through routes on prepared sizes of bituminous coal from mines in Virginia, southern West Virginia and eastern Kentucky to all destinations in New England and to certain points in the middle Atlantic states. In a supplement to the order issued on July 22 it ordered the railroads to establish on or before December 31, to expire on April 30, additional joint rates and through routes, on bases prescribed in the report, from mines in the New River, Pocahontas and Tug River districts and Clinch Valley district No. 1 to all points in New England and New Jersey; from mines in the Kanawha, Coal River, Logan Thacker and Kenova districts, Clinch Valley district No. 2, and on the Big Sandy division of the Chesapeake & Ohio, to all points in New England and certain points in the middle Atlantic states; and on semi-anthracite coal from certain points in Virginia on the Norfolk & Western and Virginian to all points in New England and certain points in the middle Atlantic states.

State Commission

The Public Service Commission of New York has issued an order requiring the Fonda, Johnstown & Gloversville to install by April 1, horizontal flashing light signals at the Ballston avenue crossing in the village of Scotia. The order also requires the company to continue the practice of having conductors flag their cars over the crossing. At this crossing last June two persons were killed and the village of Scotia asked the commission to require protection. The railroad contended that the accident in June was the only fatal one in 22 years and that the method of operating cars over the crossing made it a safe crossing.

The commission in its decision says that the fact that there has been only one fatal accident is due entirely to the present method of operation of the cars (electric.) "This method should by all means be continued," says the report, "and if it could be carried out without failure, no further protection would be necessary. However, the fact remains that either through failure to apply the brakes in time or through failure of the brakes themselves, cars have not always been brought to a stop before reaching the highway, and there is apparently nothing to prevent a recurrence of this in the future. As a protection against this, the public safety reasonably requires that traffic on the highway be given some warning of the approach of an electric car. Experience has shown that such warning can best be given by automatic signals of the horizontal flashing type."

Court News

Demurrage Cannot Be Waived

The North Carolina Supreme Court holds that, the duty to collect demurrage being imposed by law, it cannot be waived or remitted by custom or by contract, as, in this case, by an average agreement, since this would result in discrimination among shippers.—Davis v. Gill, 189 N. C. 542, 127 S. E. 532.

Labor News

General chairmen of the Switchmen's Union of North America will meet in Chicago on December 8 to consider proposals that the union apply to the railways for increased wages and changes in working rules.

A special hearing on the issues involved in the strike of telegraphers on the Atlantic Coast Line was held by the Railroad Labor Board on December 4. This hearing was called on the recommendation of the board members who visited the scene of the strike when it began several weeks ago.

Representatives of several railroad labor organizations not affiliated with the American Federation of Labor met in Chicago on November 27 to formulate a plan to oppose the program of legislation supported by the larger railroad unions, including the brotherhoods, which among other things seeks to abolish the United States Railroad Labor Board.

A district court may authorize a railroad receiver under its jurisdiction to fix wages for employees of the railroad at his discretion regardless of orders of the United States Railroad Labor Board, according to a decision of the Supreme Court of Colorado, handed down on November 23. The Supreme Court's action confirmed the judgment of District Judge Johnson of Denver who is responsible, under a receivership, for the operation of the Denver & Salt Lake. Judge Johnson upheld his appointee, the receiver of the Denver & Salt Lake, in reducing the wages of the employees below the rates established by the Labor Board, and refusal to permit the Brotherhoods to intervene.

Plans for Wage Increase Demands Take Form

Nearly all of the larger organizations of railway employees have completed or nearly completed plans for a concerted drive for wage increases and revisions of working rules this winter. Two of the organizations, the Brotherhood of Maintenance of Way Employees and Railway Shop Laborers and the Order of Railroad Telegraphers, are now awaiting decisions of the Labor Board on their applications for wage increases submitted at various times since last summer. No indication is forthcoming as to the date when these decisions will be announced by the board.

The Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees is now holding a number of sectional meetings of its general chairmen to adopt a program of wage increase applications and is to hold a national meeting of its representatives from all over the country in Cincinnati, Ohio, on January 16 to complete arrangements for the campaign. Their demands are expected to be taken to the railways shortly after the Cincinnati meeting.

The train and engine service brotherhoods, which have already held a series of meetings and approved proposals for wage increases understood to amount to approximately seven per cent, are expected to make their applications to the managements in January. It is believed that the goal of these brotherhoods is a return to the wages in effect prior to the Labor Board wage decrease of 12 per cent on July 1, 1921. Approximately five per cent of that decrease has been recovered within the last 12 months as a result of wage increases authorized by nearly every road in the United States.

EMPLOYEES of the General Electric Company to the number of 1,728 received from the company, in the six months ending with last June, a total of $17,651 in the shape of awards for suggestions which increased the efficiency of the company's operations. The awards ranged from $1 to $500. A similar distribution was made in 1924.

THE INTERSTATE COMMERCE COMMISSION has denied a petition of the Chicago & Eastern Illinois for a suspension of the effective date of the second automatic train control order (January 14, 1924), but has authorized the installation to be made between Danville, Ill., and Terre Haute, Ind., instead of between the points specified in the order.

Foreign Railway News

German Railways to Borrow $100,000,000 in New York

It is reported that a group of New York banks is preparing to float a loan of $100,000,000 to the German State Railway Company, a large portion of the proceeds of which will be turned over to France by way of reparations under the Dawes plan.

Comparative Cost of Locomotives in England and Poland

Polish engineers have calculated that it costs 186,000 zloty ($35,898) to manufacture a standard locomotive in Poland compared with 220,000 ($42,460) in England, according to Assistant Trade Commissioner Ronald H. Allen, Warsaw. In Germany, locally manufactured locomotives are produced at figures about equaling costs of manufacture in Poland, but the export price on the German product, owing to the dumping system, is less than the Polish manufacturers can sell for.

A Memorial to Sir William Acworth

A group of men prominent in transportation in Great Britain is proposing a memorial of some kind to the memory of Sir William Acworth, the well known British railway expert who died several months ago. Sir William was the originator of the courses in the economics and law of transportation at the London School of Economics and the committee is asking that subscriptions be sent to the Secretary of the Acworth Memorial Fund at this school. The committee is composed of the following: Lord Ashfield, Sir Guy Granet, Sir Linden Macassey, Sir Felix J. C. Pole, Sir Herbert A. Walker, Sir R. L. Wedgwood, W. H. Beveridge, H. G. Burgess and R. H. Selbie.

Increase in Receipts of French Railways

Traffic receipts on all the large French railways during the period January 1 to October 1, 1925, show a considerable increase when compared to the same period in 1924, as can be seen from the following official figures just received by the Bankers Trust Company of New York from its French information service:

EARNINGS OF FRENCH RAILWAYS
(In thousands of francs)

Jan. 1 to Oct. 1	1924	1925	Difference in favor of 1925
Etat	1,024,924	1,148,928	124,004
P. L. M.	1,894,400	2,168,010	273,610
Nord	1,128,614	1,236,850	108,236
Orleans	936,750	1,041,555	104,805
Est	1,000,657	1,077,008	76,351
Midi	430,285	493,096	62,811
Alsace & Lorraine	598,263	641,406	43,143

This steady increase in receipts which can still be noted monthly is largely due to the increase of tourist traffic.

Increased Railway Facilities in the Maritime Alps

The International Sleeping Car Company has constructed 36 special cars for the fast Calais-Mediterranean express service, and has under order more than 300 of the same model, which will be used in different parts of Europe to augment the de luxe trains innovated at Nice two years ago, according to Consul Otis Glazebrook at Nice, France.

Other improvements are planned by this company. Traveling agencies are being multiplied, and a central agency will soon be established at Paris. The largest part of the improvements will be made with a view to popularizing the Cote d'Azur, and particularly Nice.

The important Vienna-Nice-Cannes line will receive special attention, as will similar lines having their points of departure in large cities. A train de luxe, for daytime travel, will be inaugurated in December, on the Milan-Nice-Cannes line. This will be the first of a series of services that will add to the success and prosperity of the Cote d'Azur. It is estimated that this improvement will cost the company over 30,000,000 francs.

Equipment and Supplies

Union Pacific Equipment Program

The Union Pacific is contemplating coming in the market soon for the following equipment: 25 locomotives, 47 passenger cars and 2,100 freight cars.

Locomotives

THE WESTERN PACIFIC is inquiring for 5 Mountain type locomotives.

THE UNITAH RAILWAY has ordered one, 2-6-6-2 Mallet type locomotive from the Baldwin Locomotive Works.

THE ATLANTA & WEST POINT has ordered two heavy Pacific type locomotives from the Lima Locomotive Works.

THE GOVERNMENT OF PORTO RICO has ordered 3 four-wheel saddle tank, switching locomotives, from the Baldwin Locomotive Works.

THE ST. LOUIS-SAN FRANCISCO has ordered 10 Mountain type and 15 Mikado type locomotives from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of November 7.

THE CHILE EXPLORATION COMPANY has ordered six 70-ton electric locomotives and three 25-ton pushpole electric locomotives from the Baldwin Locomotive Works and the Westinghouse Electric & Manufacturing Company.

THE KANSAS CITY SOUTHERN is converting some of its consolidation locomotives to eight-wheeled switchers. Five of these are the E-1 class with 39,460-lb. tractive effort and four of the E-3 class with 47,124-lb. tractive effort.

Freight Cars

THE PITTSBURGH & WEST VIRGINIA is inquiring for 1,000 gondola cars of 50 tons' capacity.

THE NATIONAL TUBE COMPANY has ordered 50 hopper car bodies from the Greenville Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of October 10.

THE WABASH has placed orders for 2,000 automobile box cars, of these, 1,000 were let to the American Car & Foundry Company, 300 to the Streator Car Company and 700 to the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of November 21.

THE LEHIGH VALLEY is inquiring for 100 steel, drop end, gondola cars of 70 tons' capacity. This is in addition to its inquiry for 500 steel sheathed automobile cars of 50 tons' capacity and 500 four-hopper coal cars of 70 tons' capacity, which were reported in the *Railway Age* of November 14 and 21.

THE ATCHISON, TOPEKA & SANTA FE has ordered 850 general service gondola cars from the American Car & Foundry Company, 500 furniture cars from the Pullman Car & Manufacturing Corporation and 500 box cars from the General American Car Company. This is in addition to 500 refrigerator cars ordered from the American Car & Foundry Company and 500 refrigerator cars ordered from the Pullman Car & Manufacturing Corporation, reported in the *Railway Age* of November 28.

Passenger Cars

THE MOBILE & OHIO is inquiring for six combination baggage and express cars and four coaches.

THE COLUMBUS & GREENVILLE has ordered one combination passenger and baggage gasoline rail motor car and one passenger trailer car from the J. G. Brill Company.

THE ERIE has ordered 6 through line coaches and 50 suburban coaches from the Standard Steel Car Company. This is in addition to its previous order to the same builder for 18 through line coaches and 50 suburban coaches, reported in the *Railway Age* of November 28.

Motor Buses

THE NEW YORK, NEW HAVEN & HARTFORD has bought for the New England Transportation Company, its motor bus subsidiary, 51 motor coaches as follows: 20 type Y parlor motor coaches from the Yellow Coach Manufacturing Company, through the National Railway Appliance Company; 16 type Z parlor motor coaches from the Pierce Arrow Company and 15 Fageol safety coaches from the Fageol Motor Company. The New England Transportation Company already has 40 buses in service on 10 routes totaling 184 miles with a daily coach mileage of 1,828.

Iron and Steel

THE ATLANTIC COAST LINE is inquiring for 250 tons of steel for bridges.

THE ATCHISON, TOPEKA & SANTA FE is inquiring for 900 tons of structural steel.

THE READING has ordered 600 tons of steel for bridges from the Bethlehem Steel Company.

THE ILLINOIS CENTRAL has ordered 500 tons of structural steel from the Continental Bridge Company.

Machinery and Tools

THE CANADIAN NATIONAL has ordered a 4,000-lb. steam hammer from the Niles-Bement-Pond Company.

THE LOUISVILLE & NASHVILLE has ordered 4, 36 in. by 17 ft. engine lathes from the Niles-Bement-Pond Company.

THE NEW YORK, CHICAGO & ST. LOUIS is preparing its machine tool list for 1926 and has asked for prices on 15 to 20 machine tools.

Signaling

THE LEHIGH VALLEY has contracted with the General Railway Signal Company for the installation of an electric interlocking, with position light signals, at Easton, Pa.; machine to have 62 working levers.

THE ILLINOIS CENTRAL has ordered from the General Railway Signal Company an electric interlocking for 67th street, Chicago; 176 levers. The interlocking is divided into two sections with check lock levers.

THE BOARD OF COMMISSIONERS, Port of New Orleans, has given to the General Railway Signal Company an order for the installation of an electric interlocking at the Louisville & Nashville bridge over the canal at Gentilly, La.; 15 working levers.

THE WHEELING & LAKE ERIE has contracted with the General Railway Signal Company for the installation of automatic block signals for the protection of the crossing with the Northern Ohio Traction Company, at Bedford, Ohio. Color light signals will be used.

THE PENNSYLVANIA has contracted with the Union Switch & Signal Company for the installation of 29 highway crossing signals at Kokomo, Ind. The signals are to be of the flashing-light type to be operated by means of an alternating current power line, 220-volt, with storage batteries.

THE HYDRO-ELECTRIC POWER COMMISSION of Ontario has awarded a contract to the Union Switch & Signal Company for interlockings, with color light signals, at Windsor, Ont., at crossings with the Essex Terminal; two mechanical plants with four-lever machines. The Union Company is also making extensive additions to the signaling of the Hydro-Electric Railway at Walkerville, Ont.

THE SOUTHERN RAILWAY has contracted with the General Railway Signal Company for the installation of automatic block signals between Biltmore, N. C., and Morristown, Tenn., and between Roe Junction, Tenn., and New Line. This contract covers seven miles of double track and 84 miles of single track. The A. P. B. system to be used on single track. Mechanical interlockings at four points are being remodeled to be included in the A. P. B. system. Color light signals will be used, the blocks being about one mile long.

Extensive Automatic Signaling on Missouri Pacific

The contract of the Missouri Pacific with the General Railway Signal Company for automatic block signals, recently noticed, calls for the equipment of 256½ miles of track, part of the line being double track and part being single track; and the contract is for the installation as well as the manufacture of the apparatus.

The contract is divided into five sections as follows: Poplar Bluff, Mo., to Moark, Ark., 12 miles single track and 8 miles double track; Moark, Ark., to Hoxie, Ark., 43.5 miles single track; Hoxie, Ark., to Bald Knob, Ark., 56.5 miles single track and 5 miles double track; Little Rock, Ark., to Ensign, Ark., 6.5 miles on the southbound track of double track line; and Benton, Ark., to Clear Lake Junction, Ark., 112 miles single track.

The absolute permissive system will be used on the single track sections and the total number of signals will be 346—low-voltage color-light signals. The contract includes the erection of a pole line for the transmission wires; 244 miles, 9,000 creosoted Southern pine poles and 485 miles of No. 4 aluminum cable with steel core. Electric current is to be supplied by commercial plants at 4,400 volts.

LOCOMOTIVES ORDERED, INSTALLED AND RETIRED

Month—1925	Domestic orders reported during month	Installed during month	Aggregate tractive effort	Retired during month	Aggregate tractive effort	Owned at end of month	Aggregate tractive effort	On order first of following month	Building in R. R. shops
January	27	167	7,455,971	213	6,242,079	64,824	2,590,525,478	280	81
February	49	125	6,233,494	169	5,118,878	64,779	2,591,618,849	293	77
March	106	138	6,249,721	170	4,888,933	64,747	2,592,979,637	315	83
April	84	171	7,498,252	409	13,126,135	64,509	2,587,347,354	340	82
May	51	147	7,930,840	172	5,329,461	64,484	2,589,912,779	329	80
June	16	179	9,746,100	224	8,296,659	64,435	2,591,286,720	279	66
July	39	139	7,208,534	170	5,602,619	64,420	2,593,971,635	250	59
August	26	147	8,384,262	210	5,866,368	64,357	2,596,489,549	193	45
September	86*	129	7,981,464	229	8,601,871	64,257	2,595,729,142	237	37
October	199	150	7,284,850	266	7,930,271	64,142	2,595,082,839	218	33
November	101	...	.....	...	.....	.....	.....	...	..
Total for 10 months	...	1,492	.....	...	.....	.....	.....	...	..
Total for 11 months	784	...	.....	...	.....	.....	.....	...	..

Details as to orders from *Railway Age* weekly reports. Figures include all domestic orders placed with builders and railroad shops, but not rebuilt equipment.

Figures as to installations and retirements prepared by Car Service Division, A. R. A., published in Form C. S. 56 A-1. Figures cover only those roads reporting to the Car Service Division. They include equipment received from builders and railroad shops. Figures of installations and retirements alike include also equipment rebuilt to an extent sufficiently so that under the accounting rules it must be retired and entered in the equipment statement as new equipment. Figures as to orders as given in first column of table are not therefore comparable with figures relating to installations given in succeeding columns.

*Corrected figure.

Supply Trade News

The Allis-Chalmers Manufacturing Company, Milwaukee, Wis., has opened a branch office in Houston, Tex., in charge of **R. I. Moore.**

J. H. Ainsworth, railroad representative of the **A. M. Byers Company,** Pittsburgh, Pa., has been appointed director of railroad sales, with headquarters at Pittsburgh.

Charles L. Wood, who was appointed general manager of sales of the **Carnegie Steel Company,** Pittsburgh, Pa., as was announced in the *Railway Age* of November 28, was born in Youngstown, Ohio, on September 11, 1873. After attending the public schools of his native city he entered the Ohio State University at Columbus, where he took a course in mining engineering in the class of 1896. He entered the industrial field as a chemist with the Calumet Furnace Company, in Chicago, and later took up mining engineering in Colorado and other western districts. In 1898, Mr. Wood became affiliated with the American Steel Hoop Company and served as manager of the order department when it moved to New York. At the time this company was consolidated with the Carnegie Steel Company and with the formation of the United States Steel Corporation, Mr. Wood was transferred to the sales department of the Carnegie Steel Company. He served as assistant to William G. Clyde when the latter became assistant general manager of sales in that department and since 1918 Mr. Wood has been assistant general manager of sales in charge of the bar, hoop and band business of the Carnegie Steel Company.

Charles L. Wood

George L. Kippenberger, assistant to the vice-president of the **St. Louis Car Company,** St. Louis, Mo., has been promoted to vice-president and assistant general manager.

E. C. Chacey has been appointed sales representative in charge of the sales office at 350 Madison avenue, New York, of the **American Creosoting Company,** Louisville, Ky.

The Worthington Pump & Machinery Company, Cincinnati, O., has awarded a contract to the H. K. Ferguson Company, Cleveland, O., for a 115 by 140-ft. addition to its plant.

Ray A. Sossong, manager of gas plants, **Air Reduction Sales Company,** New York, was elected president of the **International Acetylene Association,** at the recent annual convention in Chicago.

H. A. Watkins has been appointed metropolitan district sales manager for the **Bridgeport Brass Company,** with office in the Pershing Square building, New York City. Mr. Watkins was formerly superintendent of docks at New York City. He served as a major of engineers during the late war.

The Baker R & L Company, Cleveland, Ohio, has changed its corporate name to **The Baker-Raulang Company.** The company manufactures electric industrial material handling tractors and trucks, under the Baker name, and also closed bodies for automobiles, under the name of Raulang.

W. E. Hedgcock, assistant vice-president in charge of sales of the **American Car & Foundry Company,** at New York, has been elected a vice-president with duties as formerly. **Oscar B. Cintas,** vice-president of the American Car & Foundry Export Company, at New York, has been elected also as a vice-president of the American Car & Foundry Company.

Grant B. Shipley, consulting engineer, Pittsburgh, Pa., has been retained to design and help put into operation the following new wood preserving plants: The Kettle River Treating Company, Edwardsville, Ill.; W. P. Brown & Sons Lumber Co., Fayette, Ala.; Taylor-Colquitt Company, Spartanburg, S. C.; Great Northern, Somers, Mont., and the Detroit & Mackinac, East Tawas, Mich.

Walter F. Mulhall, who for the past four years has been an account executive with the **G. M. Basford Company,** New York, has been elected vice-president of that company. Mr. Mulhall, before going with the G. M. Basford Company, was assistant to the general superintendent of the Midvale Steel Company, then assistant to the vice-president of the Tacony Steel Company and the Penn-Seaboard Steel Company.

William V. Griffin, of the Anthony N. Brady estate, and **Fred Allison,** engineer of the Ford Motor Company, were elected directors at a recent meeting of the board of directors of the **American Brown, Boveri Electric Corporation,** New York. **Laurence R. Wilder,** president of the company, announced that it had taken over the **Moloney Electrical Company,** of St. Louis, Mo., manufacturer of transformers.

The American Brake Beam Manufacturers' Export Association, of West Nyack, N. Y., has filed papers under the export trade act (Webb-Pomerene law) with the Federal Trade Commission, for the purpose of exporting brake beams and parts pertaining thereto. The officers are **R. H. Ripley,** president; **A. C. Moore,** vice-president, and **F. W. Edmunds,** secretary-treasurer. Member companies are the American Steel Foundries and the Chicago Railway Equipment Company, both of Chicago.

George P. Baldwin, general merchandising manager of the **General Electric Company,** Schenectady, N. Y., has been elected a vice-president. He will have charge of activities connected with the electrification of steam railroads and such other duties as may be assigned to him by the president. His new headquarters are at 120 Broadway, New York City. **Charles E. Patterson,** vice-president in charge of finance since 1920, is now vice-president in charge of all merchandising activities of the company, including the supervision of company supply houses. He will have his headquarters at Bridgeport, Conn. The accounting department responsibilities of Mr. Patterson have been assumed by the controller, **S. L. Whitestone.** George P. Baldwin was born in San Francisco, Cal., on January 22, 1874. He graduated from Leland Stanford University in 1896 with the A.B. degree. The following year he entered the employ of the Stanley Electric Manufacturing Company, which in 1903 was bought by the General Electric Company. At that time, Mr. Baldwin became vice-president of the Blaisdell Company of Los Angeles, where he remained until March 16, 1910, when he was made manager of the Pittsburgh office of the General Electric Company. On December 16, 1915, he was made manager of the Atlantic district, with headquarters at Philadelphia, Pa. When the merchandising department was created in 1923, he was made its first manager.

G. P. Baldwin

Joseph Wainwright, eastern sales manager of the machinery department of **Manning, Maxwell & Moore, Inc.,** New York,

has been appointed general sales manager of the machinery department, having jurisdiction over all district offices. Mr. Wainwright was appointed eastern sales manager of the machinery department about a year ago, and he has been connected with Manning, Maxwell & Moore, Inc., for eighteen years, serving successively as manager of the Detroit, Boston and Philadelphia offices.

H. E. Anderson, district manager of **S. F. Bowser & Company, Inc.,** with headquarters at New York, has been promoted to manager of the northeastern division, with headquarters at Albany, N. Y., and will be succeeded by **E. M. Harshbarger,** manager of railroad sales, with headquarters at Fort Wayne, Ind. **G. J. Komarek,** chief sales correspondent in the lubrication and filtration division, with headquarters at Fort Wayne, Ind., has been promoted to district manager, with headquarters at Oklahoma City, Okla.

The Maclean-Fogg Lock Nut Company, Chicago, has been incorporated to manufacture lock nuts. The officers of the new company are: **J. A. Maclean,** president, who was formerly vice-president and general manager of the American Bolt Corporation, Boss Nut division; **William H. Odlum,** vice-president and treasurer, is also president of the Duro Metal Products Company; **J. W. Fogg,** vice-president and sales manager, was formerly a representative of the American Bolt Corporation, Boss Nut division; **N. F. McNaught,** secretary, is also secretary and treasurer of the Duro Metal Products Company.

Woodin Heads American Locomotive Company

William H. Woodin, president of the American Car & Foundry Company, New York, has been elected also president of the American Locomotive Company, to succeed Andrew Fletcher, whose death on November 29 is reported elsewhere in this issue. Mr. Woodin has been a director and member of the executive committee of the American Locomotive Company for many years; he is one of the largest owners of the company's stock and has long been a close associate of the late president, Mr. Fletcher.

Obituary

J. G. Arn, Cincinnati representative of the Dearborn Chemical Company, Chicago, died at Cincinnati, Ohio, on November 23, after a lingering illness of nephritis. Mr. Arn, in 1883, entered the employ of the Louisville & Nashville, serving consecutively in the shop and as fireman, locomotive engineman and traveling engineer until 1910, at which time he left railroad work to go as a mechanical expert with the Galena-Signal Oil Company. After several years in this work he went with the Nathan Manufacturing Company, and later took service with the Dearborn Chemical Company.

Trade Publications

GOLD'S VAPOR SYSTEM.—Bulletin No. 29 covering Gold's vapor system, with colored inserts showing its application to the various types of passenger train cars, has been issued by the Gold Car Heating & Lighting Company, Brooklyn, N. Y.

SPLICES AND TAPES.—"Splices and Tapes for Rubber Insulated Wires" is the title of a 16-page booklet issued by the Okonite Company, Passaic, N. J. The importance of making perfect splices; the important properties of tape; how to recognize these properties and how to make a splice are the features described in this booklet.

POWER SHOVELS.—The Orton & Steinbrenner Company has issued bulletin No. 39 comprising 14 pages devoted to its ½, ¾ and 1-cu. yd. power shovels. The first three pages are devoted to descriptions and illustrations of the various mechanical parts of the shovel, while the remaining pages are devoted to illustrations, tables and diagrams showing the application of these shovels to various classes of work. The diagrams in particular will prove of value to the users of shovels as showing the working dimensions, reach, depth of cut, etc., to which the three sizes are best adapted.

Railway Construction

BOSTON & MAINE.—This company has awarded a contract to the John H. Proctor & Company, Boston, Mass., for the furnishing of 3 unloading towers and a distributing bridge at Mystic Wharf, Boston, to cost about $375,000. This company has also authorized the construction of a coal handling and storage plant at Mystic Wharf, to cost about $450,000.

CENTRAL OF GEORGIA.—A contract has been awarded to the Williams Lumber Company, Columbus, Ga., for the construction of a station at Phoenix City, Ala.

CHESAPEAKE & OHIO.—Surveys are reported being made in contemplation of the construction of a 28-mile branch line from a point near Pikeville, Ky., along the Leoisa river to the Kentucky-Virginia state line.

CHICAGO, BURLINGTON & QUINCY.—A contract has been awarded to R. L. Hyde & Co., Omaha, Neb., for the construction of a structural steel and concrete railway mail building at Omaha, reported in the *Railway Age* of November 21.

GREAT NORTHERN.—The item published in the *Railway Age* of November 21, stating that the contract for the construction of a power plant and dam at Chelon, Wash., had been awarded by the Washington Water Power Company, was misleading in that it gave the impression that the Great Northern had a part in the award of the contract. This was not the case, the contract being awarded by the water power company alone. The Chelon Electric Company, mentioned in the item as a subsidiary of the Great Northern, has recently been sold to the Washington Water Power Company.

ILLINOIS CENTRAL.—A contract has been awarded to the Federal Engineering Company, Chicago, for heating and plumbing facilities in the locomotive shop, blacksmith shop, office building and tin and electric shop being constructed at Paducah, Ky.

PENNSYLVANIA.—This company has awarded a contract to the Shoemaker Bridge Company, Philadelphia, Pa., for the fabrication and erection of the steel superstructure of the American Railway Express building which the company has under construction at Sunnyside Yard, Long Island City, N. Y.; estimated cost, $200,000. A contract has been awarded to the Mead-Balch Construction Company, Indianapolis, Ind., for grading and masonry in connection with track elevation from Davidson street to Leota street, Indianapolis; total cost of work approximately $235,000.

READING.—This company has awarded a contract to the Belmont Iron Works for the construction of a grain elevator at Philadelphia, Pa., to cost approximately $172,000.

RICHMOND, FREDERICKSBURG & POTOMAC.—This company has awarded a contract to the Whiting-Turner Construction Company, Baltimore, Md., for the construction of a new bridge over the Rappahannock river and the elevation of tracks through Fredericksburg, Va., at a total cost estimated at $1,000,000. This project was reported in the *Railway Age* of May 30.

SOUTHEASTERN.—The Interstate Commerce Commission has denied the application of this company for authorization to construct a line from a connection with the Southern at Bundy Station, Va., to a connection with the Louisville & Nashville at Louellen, Ky. (13.5 miles). The proposed line was projected to open up additional coal mining areas.

SOUTHERN.—A contract for the construction of an office building at Charlotte, N. C., has been awarded to the J. J. McDevitt Company. It will be constructed of reinforced concrete finished in stone and red brick, and will be thoroughly modern in equipment. The work will start at once and be completed by October 1, 1926.

STANDARD LUMBER COMPANY.—Company forces will construct a 20-mile logging railroad from Lyon's Dam, Cal., to Schoettgenn's Springs. The headquarters of the company are at Stockton, Cal.

Railway Financial News

BOSTON & MAINE.—*Use of* $13,000,000 *New Capital.*—Hearings on the petition of the Boston & Maine for the approval of the issuance of $13,000,000 7 per cent prior preference stock and other details of its reorganization plan were held before the commissioners of the Massachusetts Department of Public Utilities on December 1. Homer Loring, chairman of the executive committee, when asked to what uses the $13,000,000 new capital was to be put, said that it was to cover the cost of a three-year capital improvement program on which savings of 15 per cent on the total investment were expected as a result of economies in operation. The important items included by Mr. Loring were as follows: For reconstruction of freight terminals in the Boston district, $6,000,000 to $8,000,000. These terminals at the present time are built very largely on pilings. The savings were estimated to amount to one to two million dollars in a three-year period in the form of increased efficiency of terminal operation. Longer passing tracks and more double tracks, the latter including notably a double track on the Stony Brook division from Ayer, Mass., to Lowell, and from North Berwick, Me., to Portland. Ballasting at the rate of 100 miles a year at a total cost of $1,000,000 for the three years. A new general office building at Lechmere Square (near North Station, Boston), $450,000. Shop and locomotive improvements, $500,000 to $1,000,000, which expenditures may include Diesel engines and from 30 to 40 gasoline rail motor cars. Mr. Loring also pointed out that the road would probably have to buy additional freight cars.

CHICAGO & NORTHWESTERN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority for the authentication and delivery of general mortgage bonds to reimburse the treasury for expenditures amounting to $1,375,000 in the retirement of maturing bonds and to $1,000,000 for improvements.

DETROIT & IRONTON.—*Securities.*—This company has applied to the Interstate Commerce Commission for authority to issue $2,265,000 of 5 per cent first mortgage bonds and $707,200 of capital stock, the proceeds to be used for construction purposes.

GEORGIA & FLORIDA.—Tentative Valuation.—The Interstate Commerce Commission has issued a tentative valuation report placing the final value for rate-making purposes of the property owned and used for common-carrier purposes at $2,775,000 as of June 30, 1917.

ILLINOIS CENTRAL.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority to issue $9,240,000 of 4½ per cent equipment trust certificates, to be sold to Kuhn, Loeb & Co., at 97.

ILLINOIS CENTRAL.—*Equipment Trusts Sold.*—Kuhn, Loeb & Co. have sold $9,240,000 4½ per cent equipment trust certificates, series L, maturing in equal annual installments from October 1, 1926, to October 1, 1940. The certificates were sold at an average price of 98¾ being an average yield of 4.7 per cent. The equipment involved includes 1,400 freight cars, 130 suburban motor cars and 85 suburban trailer cars of a total approximate cost of $11,556,000.

LONG ISLAND.—*New Directors.*—Arthur S. Somers, of Brooklyn, N. Y., vice-president and treasurer of the Fred L. Lavanburg Company; member of the Board of Education of the City of New York, and a director of the Brooklyn-Manhattan Transit Corporation, has been elected a director to fill the vacancy caused by the death of A. C. Bedford. Jay Cooke, of Philadelphia, Pa., a director of the Pennsylvania Railroad Co., has been elected a director to fill the vacancy caused by the resignation of George Dallas Dixon.

MORRIS & ESSEX.—*Bonds.*—This company has been authorized by the Interstate Commerce Commission to issue $11,582,000 construction-mortgage gold bonds to be delivered to the Delaware, Lackawanna & Western in settlement of expenditures for additions and betterments. The Lackawanna has been authorized to assume obligation and liability as guarantor of these bonds.

NEW ORLEANS, TEXAS & MEXICO.—*Bonds.*—The Interstate Commerce Commission has authorized the issue of $1,700,000 first mortgage bonds, series A or series B, the series A bonds bearing 5½ per cent interest to be sold at not less than 98 per cent of par and the series B bonds paying 5 per cent to be sold at not less than 93 per cent of par. Pending the sale of these bonds, they may be pledged from time to time as collateral for short term notes. The issuance of these securities is in connection with the purchase by the Gulf Coast Lines of the Sugar Land, the Asherton & Gulf and the Rio Grande City recently authorized by the commission as reported in the *Railway Age* of November 28. The securities proposed to be purchased are as follows: Sugar Land common stock, $250,000; first mortgage 5 per cent bonds, $384,000; Asherton & Gulf common stock, $75,000; first mortgage 6 per cent bonds, $200,000; Rio Grande City common stock, $22,000. These securities are to be purchased from W. T. Eldridge. Further payments are to be made in connection with the Rio Grande City, which railroad is now under construction. The purchase price mentioned covers only the capital stock represented by its charter, franchise and a contract for materials and supplies to be procured from the United States government.

NEW YORK, CHICAGO & ST. LOUIS.—*Securities.*—This company has been authorized to sell $9,575,000 refunding mortgage 5½ per cent bonds, series B, at not less than 95, the proceeds to be used to pay promissory notes which mature on January 1, 1926, which notes were used to pay Toledo, St. Louis & Western prior lien 3½ per cent bonds which matured on July 1, 1925. The bonds which it is proposed to sell were authorized to be issued in a decision dated June 29, 1925, at which time the commission also allowed the railroad to pledge them as collateral security for notes.

NORFOLK & WESTERN.—*Acquisition.*—Hearings on this company's application to the Interstate Commerce Commission for authority to acquire control of the Virginian were resumed at Washington on November 30 when witnesses who had testified on behalf of the Norfolk & Western were recalled for cross-examination by counsel for the Chesapeake & Ohio and others who are opposing the application.

SEABOARD AIR LINE.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $2,820,000 of 4½ per cent equipment trust certificates to be sold to Freeman & Co., at 96.51.

SEABOARD AIR LINE.—*Lease.*—This company has applied to the Interstate Commerce Commission for authority to acquire further control by lease of the Tampa & Northern, of which it now owns the stock, and also of the Brooksville & Inverness by lease and by purchase of the stock.

TENNESSEE CENTRAL.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $410,000 first mortgage 6 per cent bonds, series B, to be pledged up to December 31, 1927, as collateral security for short term notes.

WYOMING & MISSOURI RIVER.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Aladdin, Wyo., to Belle Fourche, S. D., 17.64 miles.

Dividends Declared

Boston & Albany.—2¼ per cent, quarterly, payable December 31 to holders of record December 30.

Buffalo, Rochester & Pittsburgh.—Common, 2 per cent, payable December 15, to holders of record December 5.

Lackawanna R. R. of New Jersey.—1 per cent, quarterly, payable January 2 to holders of record December 7.

Morris & Essex.—2.12½ per cent, payable January 2 to holders of record December 9.

New York, Lackawanna & Western.—1¼ per cent, quarterly, payable January 2 to holders of record December 12.

Valley R. R. (New York).—2½ per cent, payable January 2 to holders of record December 15.

Trend of Railway Stock and Bond Prices

	Dec. 1	Last Week	Last Year
Average price of 20 representative railway stocks	93.35	91.13	79.03
Average price of 20 representative railway bonds	93.09	92.90	89.14

Railway Officers

Executive

H. A. Scandrett, vice-president of the Union Pacific, with headquarters at Omaha, Neb., has been given extended jurisdiction to include the department of public relations of the Union Pacific system, and the land department of the Union Pacific.

Operating

W. S. Perry has been appointed assistant trainmaster of the Chesapeake & Ohio, with headquarters at Huntington, W. Va.

H. H. Crowell has been appointed assistant trainmaster of the East Carolina division of the Seaboard Air Line, with headquarters at Hamlet, N. C.

C. E. McCarty has been appointed inspector of transportation of the Kansas City Southern, with headquarters at Kansas City, Mo., succeeding **C. H. Wright,** who has been promoted to office assistant to the general superintendent of transportation.

E. J. Guthrie, superintendent of the Southern division of the Central Vermont, in addition to his present duties, has been appointed acting marine superintendent, with headquarters at Pier 29, East River, New York City, succeeding F. A. Dougherty, deceased.

O. N. Harstad, who has been promoted to general manager of the Eastern lines of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, was born on December 25, 1886, at Sioux City, Ia., and entered railway service in January, 1904, as a clerk in the office of a division superintendent on the Chicago, Milwaukee & St. Paul. He was later promoted to chief clerk and held that position until January, 1911, when he was promoted to chief clerk to the general superintendent. Mr. Harstad was promoted to trainmaster in 1917 and in the following year was promoted to division superintendent, with headquarters at Aberdeen, S. D. He was later promoted to general superintendent of the Southern district, with headquarters at Chicago, and remained in that position until October, 1924, when he was promoted to assistant general manager, with the same headquarters. Mr. Harstad continued in that capacity until his recent promotion to general manager.

O. N. Harstad

R. D. McKeon, superintendent of the Elmira division of the Pennsylvania, with headquarters at Elmira, N. Y., has been appointed general agent and superintendent of the Chicago Terminal division, with headquarters at Chicago, succeeding W. H. Scriven, whose death on October 3 was reported in the *Railway Age* of October 10.

C. E. Brinser, assistant superintendent of the Indianapolis division of the Pennsylvania, with headquarters at Louisville, Ky., has been promoted to superintendent of the Elmira division, with headquarters at Elmira, N. Y., succeeding **R. D. McKeon,** transferred to Chicago as general agent and superintendent of the Chicago Terminal division.

H. N. Walters has been appointed trainmaster of the Chesapeake & Ohio, with headquarters at Limeville, Ky. **A. M. Davidson** has been appointed assistant trainmaster, with headquarters at Chillicothe, Ohio, succeeding Mr. Walters. **H. C. Marrs** has been appointed assistant trainmaster, with headquarters at Martin, Ky., succeeding Mr. Davidson.

H. E. Patterson has been appointed superintendent of the Buffalo and Rochester divisions of the Buffalo, Rochester & Pittsburgh, with headquarters at Rochester, N. Y., succeeding M. G. McInerney, who has been granted a leave of absence. **P. N. Boylan** has been promoted to assistant superintendent of the Buffalo and Rochester divisions, with headquarters at Rochester, N. Y., and **W. E. Kelley** has been promoted to chief dispatcher of the Rochester division, with headquarters at the same place.

C. H. Buford, who has been promoted to assistant general manager of the Eastern lines of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, entered railway service as engineer of track elevation on the Chicago, Milwaukee & St. Paul. In April, 1917, he was promoted to trainmaster of the Sioux City and Dakota division, and in February of the following year was transferred to the LaCrosse division, with headquarters at LaCrosse, Wis. Mr. Buford was promoted to superintendent of the Wisconsin Valley division, with headquarters at Wausau, Wis., in July, 1918, and in November of that year was transferred to the Superior division. He was transferred to the Sioux City and Dakota division in August, 1919, and to the Terre Haute division in September, 1921. In October, 1924, Mr. Buford was promoted to general superintendent of the Southern district, with headquarters at Chicago, where he remained until his recent promotion to assistant general manager.

Traffic

T. L. Southwell has been appointed assistant general freight agent of the Seaboard Air Line, with headquarters at Tampa, Fla.

H. H. Taylor has been appointed general agent of the Gulf Coast Lines, with headquarters at Houston, Tex., a newly created position.

H. S. Young, industrial agent of the Atlanta, Birmingham & Atlantic, has been promoted to assistant general freight agent. **R. C. McLemore** has been promoted to industrial service agent.

Mechanical

W. L. Longstreth, assistant road foreman of engines of the Panhandle division of the Pennsylvania, with headquarters at Columbus, O., has been transferred to the Eastern division, with headquarters at Pittsburgh, Pa., instead of promoted to assistant trainmaster, as reported in the *Railway Age* of November 21.

Engineering, Maintenance of Way and Signaling

J. E. Hogan has been appointed assistant division engineer of the Chesapeake & Ohio, with headquarters at Hinton, W. Va., succeeding W. H. Hanchett, who has resigned.

Special

Frederick C. Sweeton, supervisor of land appraisals of the Pennsylvania, with headquarters at Philadelphia, has been promoted to assistant real estate agent, with the same headquarters.

Obituary

John C. Patterson, for many years connected with the engineering department of the Great Northern, died in Los Angeles, Cal., on November 6.

M. L. Reynolds, formerly superintendent of the Lansing division of the New York Central, who retired in 1917, died at Joliet, Ill., on November 16.